

CLINICAL MEDICINE AND SURGERY

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EDITORIAL

Dr. John S. Dorsey

Pioneer American Surgeon

It is always interesting to read accounts of the men whose names are embalmed in the eponymic terms which are scattered through the books on anatomy, physiology and the other basic sciences, as well as through those on the clinical sciences and arts, as names of structures, tests, diseases, and so forth; but there is, or should be, an equal, if different, satisfaction in becoming familiar with the characters and exploits of the men who planted the seeds of medicine in the United States, and tended them during their early growth.

Early in the Colonial Period, some members of an old English family—the D'Orseys—came over to the new country and settled in Maryland. When we encounter their descendants, they had dropped the apostrophe from the name, and one of them, Leonard Dorsey, who married a sister of the "Father of American Surgery," Dr. Philip Syng Physick, was a successful merchant in Philadelphia, where, on December 23, 1783, a son was born to them and was named John Syng.

Young John was so willing and able a student that he was graduated from the Friends' Academy at the age of fifteen years, and at once began his medical studies under the tutelage of his illustrious uncle. He kept at it for four years and received his M.D. degree in 1802, when only nineteen years old.

As luck would have it, he entered the practice of his profession just as his native city was emerging from the disastrous epidemic of yellow fever, in which Dr. Benjamin Rush had distinguished himself with his regime of calomel, jalap and bleeding. Thus Dr. Dorsey had a chance to study this disease at first hand, and made bedside observations and autopsies with the more confidence because he agreed with the view of Dr. Deveze, that the malady was not contagious—a fact which was demonstrated a century later.

In 1803, young Dorsey sailed for Europe to follow up his medical studies in London, and Paris. His relationship to Dr. Physick, who had been one of John Hunter's star pupils, assured him a cordial welcome in the former city, where he went to work in Hunter's School of Anatomy, and thereby gained much valuable information. The next year he went to Paris for a while, but did not care for the instruction in that center of learning and felt that his time was wasted.

In 1804 he returned to Philadelphia and opened an office for private practice; but patients did not come at once, and the first year he collected only \$375.25. It was well that he had a famous uncle to help him! That condition did not last, however, and at the time of his death his income was more than \$10,000 a year—a princely sum, for those days.

But even when his practice became large and exacting, he never neglected the cultural

side of his life. He wrote a number of excellent poems, was a proficient performer on several musical instruments and was skillful at drawing. Added to these accomplishments, his fine conversational powers, friendly manners and pleasing personal appearance, soon made him an outstanding man in his native city. His professional standing is attested by the fact that he was one of the two consultants called during the last illness of Dr. Rush, Dr. Physick being the other.

In 1807, at the age of twenty-four, he was made adjunct professor of surgery at the University of Pennsylvania, where he soon became a prime favorite with the students. In 1813 he became professor of materia medica in the same institution, and filled that chair with remarkable ability for five years.

During his surgical incumbency, he was the first man in the United States to tie the external iliac artery in a case of inguinal aneurysm. But much more important than this, he published, in 1813, his book, "The Elements of Surgery," most of the illustrations in which were from his own drawings. This was the first textbook on surgery to be published in the United States, and brought him much honor and substantial increases in his income. It was reprinted in Edinburgh and used as a textbook in the famous university there.

In 1818, at the early age of thirty-five years, he was called to the chair of anatomy at the University of Pennsylvania, succeeding Dr. Caspar Wistar, the famous anatomist. What a wonderful prospect of fame, service and popularity then opened before this distinguished young man!

But it was not to be realized. On the evening of the day when he gave his brilliant inaugural address on assuming his new and important professorship, he was stricken with typhus fever, and passed away soon thereafter.

Thus died, in the flower of his youth and ability, an American physician and surgeon, who, had he been spared longer, might well have made a name to stand with those of Hunter, Physick and Wistar.

Man As a Unit

FIVE or six times in a generation, perhaps, a book appears which is so wide in its appeal and so deep in its penetration that it may properly be called epoch-making and urged upon the attention of all thoughtful

persons, as a highly valuable, if not essential, part of the basis for their thinking. Such a book is Dr. Alexis Carrel's, "Man, the Unknown," recently published.

Dr. Carrel's equipment and opportunities for collecting the materials for a work like this are unique. Biologist, surgeon, world-citizen and born researcher, his insatiable curiosity and constructive imagination have driven him to acquire, at first hand, information along astonishingly numerous and widely diverse lines; and his scientific integrity and entire freedom from prejudices have permitted and compelled him to make remarkable use of the knowledge he has gathered and coordinated. He disclaims any standing as a philosopher, maintaining that he is purely a scientist and observer; yet no one but a profound philosopher could have written such a book.

The appearance of dogmatism in some of the statements made is merely an appearance, the natural result of the tremendous concentration of material, in a book whose every page might well be used as a text for a volume. Clayton Hoagland, of the *New York Sun*, speaks of the stupendous task of writing what he calls, "A long, clear and logical preface to a guidebook on Man."

Unlike too many lesser scientists, he has refused to reject or ignore established facts, whose cause and nature we are, at present, unable to explain fully, but has accepted them as they stand (for the time being) and has woven them into the rich fabric of his concept of man as a vastly complex, four-dimensional unity of body, emotions, intellect, esthetic and moral faculties, and soul—this latter being defined as that fundamental *af-flatus* which distinguishes man from the beasts.

Instead of limiting man's agencies for perceiving the universe to his six physical senses (including the muscle and visceral sense) Carrel declares, on the basis of personal knowledge, that we must also accept intuition, constructive imagination, telepathy, clairvoyance, mystical experiences and other matters, highly unorthodox from the standpoint of a narrowly materialistic science, as primary data of scientific observation of man's total perceptual equipment.

He recognizes heredity as the prepotent factor in determining the character of man's physical organism, but insists that, as regards his so-called higher faculties, he is the product of his environment, declaring that the

relatively low intellectual and spiritual value of most human beings is due largely to deficiencies in their psychologic atmosphere. Body and soul are merely two views taken of the same object by different methods, and cannot be investigated separately; while the forms of human activity considered by Plato are more specific of our nature than are hunger, thirst, sexual appetite and greed.

Reasoning from his own observations, Carrel has reached a conception of the nature of time, surprisingly like that advanced by Claude Bragdon, J. W. Dunne and Ouspensky. In fact, the only book with which "Man, the Unknown" can be adequately compared, for majesty of thought and profundity of reasoning, is Ouspensky's "Tertium Organum."

Intelligence, declares Carrel, is almost useless to those who possess nothing else. The development of *complete human beings*—physical organism, intellect, moral and esthetic faculties and soul—must be the aim of our efforts, for it is only with and by such integrated individuals that a real and enduring civilization can be constructed. He sees the problem confronting humanity as the liberation of man from the cosmos created by the physicists and astronomers, in which, since the Renaissance, he has been constricted, to his detriment, and the development for him of an environment wherein he may grow, in an atmosphere of truth, goodness and beauty, into the godlike stature which is his birthright.

In order to do this, we must accept the authenticated *facts* of what is now the unknown, and study them so that they may become the known. This field of study must include man's moral, esthetic and mystical faculties, as well as his emotions and his intellect. Such work has already been begun, for physicians of standing are now engaged in *studying* so-called "miraculous" cures of organic diseases, while many of their more obtuse confreres are stubbornly denying the existence of occurrences which are repeatedly-demonstrated facts.

No open-minded thinker can afford to deny himself the intellectual and spiritual excitement and uplift which he cannot fail to gain from the study of this, one of the most profound and remarkable books produced in this generation.

I am what I am, whatever others may be, and the more there are who are above me, the better it will be for humanity.—ERNEST WOOD.

The New Pharmacopeia

THE new "Pharmacopeia"—the eleventh revision ("U.S.P. XI")—became available, all over the country, on December 16, 1935, and its provisions will go into effect, superseding those of the "U.S.P.X," on June 1, 1936.

The appearance of a new revision of the Pharmacopeia is always an event which is awaited with interest by members of the medical and pharmaceutical professions, and while it by no means always meets the ideas of all of the members of these professions, it is probably as sound a presentation of the medical and pharmacologic thought of the nation as can be compiled by a large, conservative and highly scientific committee, relatively few of whose members are actively practicing clinicians.

One change in procedure adopted by this convention, which is of great interest and, potentially, of high value, is the provision for "interim revisions" of and, possibly, annual supplements to the Pharmacopeia. This can, if properly managed, be a vast help in keeping this important volume more nearly abreast of the rapid progress of research and discovery in the field of drug medication; but even so it can never be fully up to date. Even in this new revision, the list of biological products, for example, is astonishingly short and omits a number which are in general and successful use by physicians, as well as all of the newer ones which may, in spite of many favorable reports, be still considered as more or less in the experimental stage.

It is of interest to note that succinimide of mercury and typhoid vaccine, as well as several other remedies, which have been, in general clinical use for twenty years or more, are now given pharmacopeial recognition.

But in spite of its ponderous conservatism (or, perhaps, because of it), the Pharmacopeia is one of the *basic* books, with which every pharmacist *must* be familiar, and every physician *should* be, even though he may not see fit to handicap himself in his clinical practice by confining himself to the remedies which have received the imprimatur of its official authority.

There is no such thing on earth as an uninteresting subject; the only thing that can exist is an uninterested person.—G. K. CHESTERTON.

The capacity to choose the essential is the highest form of intelligence.—J. KRISHNAMURTI.

PROGRESS IN THE SCIENCE AND ART OF MEDICINE—1935

THE fundamentals of medicine, while sufficiently established for most practical purposes, are still in a state of flux, in the minds of thoughtful physicians and other scientific men. So many ideas, long considered proved and settled, have been called into question, that almost anything may happen.

One of the outstanding events of the year is the fact that a scientist and clinician of international reputation, like Alexis Carrel, has had the enlightenment to write and the courage to publish a book such as "Man, the Unknown" (discussed elsewhere in this issue). This work may mark a milestone in our progress.

This year it has been demonstrated, for the first time, that modern methods in pediatrics will permit the rearing of a set of quintuplets to the age of more than one year, with all of them in sound health.

This brief survey of the high points of the year has been prepared on the basis of an extensive study of the current medical literature and conversations with many leaders of medical thought, but it is still one man's opinion as to the most important advances, with which any other well-informed man is entitled to differ.

General Research

Much important work has been done in **endocrinology** during the past year, and the fact that a good deal of it has, as yet, no clinical or commercial bearing does not minimize its importance.

The **antihormones** are coming in for much study, and will be discussed in a forthcoming article in these pages ere long.

Hyperinsulinism, which, of course, is not a new idea, is only now coming into the field of clinical importance which it deserves. An article and an editorial in the July issue of this Journal discussed the matter fairly fully, and more practical articles on the subject are coming soon.

The functions of the **thymus and pineal glands** are being rather fully investigated, and some notes on the subject will be found on page 431 of our September issue.

A **duodenal extract**, prepared by Duncan, of the Pennsylvania Hospital, is said to have a powerful effect, when given by mouth, in cases of diabetes. It is possible that it may largely replace insulin.

A new urine test for pregnancy, using fish instead of mammals, while not yet demonstrated to be satisfactorily accurate, may have real possibilities.

An extract from the spermatogenic cells of the testes, called an "antigonad hormone" and known as *Inhibin*, gives promise of bringing relief to many sufferers from prostatism.

In the field of the **vitamins**, several steps forward have been made. Pure crystalline vitamin E has been isolated by Evans, of California, and found to be a higher alcohol. The same investigator, with his co-workers, has also isolated vitamin F, which appears to be an essential, unsaturated fatty acid, necessary to procreation but having no relation to vitamins E or A, which are also essential to fertility. The clinical connotations of these discoveries, toward the prevention and relief of sterility, may prove to be immense.

A solution of crystalline vitamin D in propylene glycol, known as *Driadol*, offers this antirachitic in readily soluble and pleasant form.

An oily suspension of vitamins A and D, by means of which large doses of these vitamins can be administered intramuscularly, at considerable intervals, is being offered under the name of *Jectovin*, and seems to possess therapeutic possibilities.

The discovery of the specific alkaloid of ergot, *ergotocin*, is a step ahead in pharmaceutical chemistry, even though its clinical powers may not prove to be so valuable as was at first hoped. Two commercial preparations of this substance are now available as *Ergotrate* and *Ergoklonin*.

The observation that persons who have never lived in the tropics may still suffer from sprue, may help in clearing up some obscure diagnoses.

In the field of **anesthesia** several forward steps have been made, with the introduction of two new gaseous anesthetics—cyclopropane and tribrom-ethanol—and a new liquid inhalation anesthetic, *Vinethene*. These may prove to make general anesthesia by this method safer and more pleasant.

Intravenous anesthesia, by means of the barbiturates, such as *Evipal*, *Nembutal* and *Sodium-Amytal*, is steadily gaining in popularity; and so is the use of local, regional and nerve-block anesthesia, in suitable cases.

These fields are being steadily widened.

The semi-official recognition of the fact that testing and recording of the visceral and cutaneous *galvanic reactions* of the body may be a vast help in diagnosis (see Spiegel and Wohl, in *Archiv. Int. Med.* for Aug., 1935, p. 327), may be a long step forward into debatable territory and may substantiate the claims of those who have been working along this line and receiving only inverse recognition.

Biologicals

A number of new, or relatively new, biological products are coming into wider use and recognition at this time.

The development of a prophylactic *toxoid* against *tetanus* is highly important to all who, working close to the soil, are subject to frequent injuries. An alum-precipitated diphtheria toxoid, so potent that 0.5 cc., in one dose, will protect, should popularize diphtheria prophylaxis. Moreover, the *intracutaneous* use of toxoids against typhoid and diphtheria, now being introduced, may well prove to be a long step forward.

A new bacterial vaccine against "colds," to be given by mouth, was presented before the American Public Health Association last October, with encouraging clinical reports.

The *Corbus gonococcus filtrate*, which has been known for several years, is now beginning to receive the wider use and recognition which it appears to deserve.

General Therapeutics

In addition to the therapeutic innovations mentioned, most of which are more or less general and several of which are still distinctly experimental, there are several others which appear to have a sound clinical background and are more limited and direct in their applications.

The therapeutic use of *oxygen* will be greatly widened by the use of the Oxinjector described in the "Notes from the I. P. G. M. A. Meeting"; the introduction of *Rossium* (see "C.M.&S.," Sept., 1935, p. 425 and also the article on morphinism, which is coming soon), bids fair to make great changes in the treatment of drug addictions.

A new and apparently different laxative has been presented as *Taxol*; and a new and "tasteless" preparation of castor oil, as *Rolicin*. Both are doing well.

The *Benzedrine Inhaler*, of Smith, Kline and French, is so exactly the thing that the Doctor ordered, for all people who have

stuffy noses that are not due to marked anatomic deformities, that every medical man who "rides the rounds" should have some in his bag, to sell or give to his patients.

Prostigmin looks as if it were going to be considerable help in treating postoperative cases of intestinal paralysis and myasthenia gravis.

Brief notes on other new pharmaceutical offerings will be found on another page in this issue, entitled "Progress in Pharmaceutical Chemistry."

Physical Therapy

The progress made in the use of the various physical therapeutic agencies will be well discussed in the Department of *Physical Therapy and Radiology*, but one point should be stressed here, and that is the growing conviction that the good effects reported from the use of the short and ultra-short high-frequency (or "radio") waves are not due solely to the heat they generate in the tissues, but to some other potency which they possess. This question will be discussed in these pages in the relatively near future.

To know what we need to know, at the moment when we need to know it, is few men's privilege.
—CHRISTOPHER MORLEY.

Sex Books

SINCE before the dawn of history, all normal human beings have been intensely and vitally interested in sex, and until relatively recent times there were no restrictions upon the dissemination of such information upon the subject as was available at any particular period.

The romantic novels dealing with the era of chivalry (XV and XVI centuries or thereabouts) suggest that, among the noble and knightly classes, such matters were not discussed freely in mixed company (whatever their conduct may have been); and the prudery of the Victorian period made even the mention of a woman's legs indecent. In our own country, the influence of the unlamented Anthony Comstock produced laws which made the education of the people, on all matters connected with the sex functions, practically impossible.

The twentieth century has seen a profound change in public opinion regarding these matters, and, as generally happens, the pendulum seems to have swung too far in the opposite direction. All evils, however, carry some measure of good, and the present freedom regarding the discussion of sex questions bids

fair to lay the foundation for sound knowledge along these lines, which has been badly needed.

There are, today, four general types of sex books, which may be classed as: (1) *Erotology*—those giving sound and detailed instructions regarding the proper exercise of the sex functions in marriage; (2) *sexual anthropology and ethnology*—those describing the sex habits and practices of ancient and primitive peoples; (3) *sexual psychology and psycho-pathology*—those discussing the psychic factors underlying normal and abnormal or unusual sexual conduct; and (4) *erotica*—those which are more or less frankly libidinous and pornographic and are intended to arouse lust or to satisfy the cravings of a certain type of sexual perverts.

Good books on erotology, such as Long's "Sane Sex Life and Sane Sex Living" and Van de Velde's "Ideal Marriage," if studied by adult men who are married or about to be married (and perhaps by some women), should go far toward correcting the ignorance and ineptitude of husbands, which is the basic cause of a high proportion of our distressing divorce rate.

Books on sexual anthropology (such as Mantegazza's "Sexual Relations of Mankind") and psycho-pathology (like Havelock Ellis' monumental "Studies in the Psychology of Sex") are intended for and helpful to a very small group of people. Their scientific intent and phraseology sterilize them of all taint of pruriency, in the minds of thoughtful people; but they are by no means a useful or proper type of reading for mental or emotional adolescents of either sex, no matter what their chronologic age may be.

The books in these first three classes are of definite and great value, not merely directly, to the people who study them and use the knowledge so gained in connection with their personal activities, but also to teachers (including physicians and clergymen) and to

enlightened parents, who will make use of the information they contain—properly adapted to the purpose—in giving to young people the instructions along these lines, which they need and to which they are entitled.

Books in the erotica class are never anything else but pernicious and degrading. However much they may be touted as "literature," the fact remains that not one person in a thousand ever pays any attention to their literary values, the other 999 skipping rapidly through them in search of the "smut" they contain. Those who read them regularly are, for by far the most part, uneducated adolescents or sexual psychopaths.

Unfortunately, several publishing houses of the lower class are broadcasting advertisements, not merely of strict erotica, but of more or less scientific books, "jazzed up" with provocative illustrations and described in lurid and slimy language, to tempt the

young and unwary into parting with some of their cash, but, far more serious, with a valuable part of their birthright of decency, in exchange for a mess of putrescent or indigestible pottage.

Every practicing clinician should be thoroughly familiar with at least one sound work on erotology (which he can lend or recommend to those of his patients who can profit by its teachings) and with at least the rudiments of sexual psychology and psychopathology, in order that he may give intelligent assistance to his patients and friends, and to their children, in solving some of the most distressing and potentially serious problems in life. A few (chiefly psychiatrists) will find the more elaborate and detailed works on sexual psychopathology helpful. A still smaller group will need or can profitably use the information contained in the books on sexual anthropology and ethnology. Nobody profits from erotica except the misguided and socially disastrous people who publish and sell such things.

NEXT MONTH

Dr. Ellis Powell, of West Monroe, La., will present the first of three highly practical articles on the importance, diagnosis and treatment of hyperinsulinism.

Dr. Ivan Ostromislensky, of New York City, will explain the relation of his allergic theory of drug addiction to morphinism.

Dr. Edward S. Pomeroy, of Salt Lake City, Utah, will set forth the factors in the perpetuation of the venereal diseases.

COMING SOON

"New Instruments for Throat Examination and Treatment." By J. B. H. Waring, M.D., Wilmington, O.

"Mechanical Causes of Constipation." By Charles J. Drueck, M.D., F.A.C.S., Chicago, Ill.

LEADING ARTICLES

Progress in Spinal Anesthesia

Relief of Pain by Subarachnoid Alcohol Injections*

By Elias Lincoln Stern, M.D., New York City

Department of Anatomy, School of Medicine, Columbia University

ALCOHOL may be safely injected into the spinal subarachnoid space in man, to relieve the intractable pains of cancer and for neuritis and neuralgia due to various causes^{1, 2, 3, 4, 5, 6, 7}. I am using it intraspinally for various sympathetic nervous disorders, including essential hypertension, peripheral vascular diseases, and chronic asthma¹².

An attempt is made, in this paper, to explain how absolute alcohol, injected into the subarachnoid space, stops intractable pains, affects sympathetic nerves and improves the peripheral circulation, without causing unbearable sensory changes and practically no motor changes.

A comparison of alcohol with other commonly used spinal anesthetic solutions is difficult and incomplete at this time. The experimental work is likewise extremely limited. However, a review of this work is timely, since the subject of intraspinal alcohol medication has aroused wide interest.

Anatomy and Physiology

The afferent or sensory filaments of the dorsal nerve roots may be classified into three groups, as follows^{8, 9}:

1.—The visceral or interoceptive fibers, which are chiefly non-medullated, and which transmit afferent impulses from the viscera and blood vessels. These are the *sympathetic afferent fibers*.

2.—The somatic or exteroceptive fibers, which are small, non-medullated or finely-medullated fibers, and which transmit all forms of touch sensation, whether crude or precise; all forms of temperature sensation, whether extreme or intermediates of heat and cold; and all forms of pain.

3.—The proprioceptive fibers, which are coarsely-medullated and which carry afferent impulses from muscles, tendons and joints.

Gasser, Bishop and Erlanger¹⁰, by using a

cathode-ray oscillograph, studied the action currents in the dorsal roots, and showed them to be composed of four different types of fibers. These four components are supposed to be associated with different functions, as shown by their histologic and physiologic characteristics.

A fourth classification then, to be added to the other three just given, may well be the *efferent sympathetic fibers*, which some believe to course through the dorsal roots.

Willinsky¹¹, of Toronto, showed that both the loss of somatic sensation and the production of somatic and sympathetic motor paralysis, following ordinary spinal anesthesia as used in every day surgery, is due to the action of the drug solely upon the *dorsal roots*. These drugs have a neurotropic action on the dorsal roots only. They do not affect the anterior or motor roots.

Alcohol as an Anesthetic

Alcohol may be considered, physiologically, in the same group with these other spinal anesthetics. All the drugs affect the non-myelinated fibers first, and the coarsely myelinated fibers last, depending upon the concentration of the drug as it comes in contact with the nerve roots. The myelin sheath is believed to act as a sort of insulation. There is some proof that it plays an important part in the chemical and electrical processes accompanying nerve conduction. It is a possible source of nutrition to the enclosed axis cylinder. Alcohol, itself a non-conductor of electricity, probably combines with the myelin to alter the normal electrical potential of the myelin sheath, which is so essential for the proper conduction of nerve impulses in the enclosed axis cylinder. If there is no organic disruption of the myelin sheath, nerve conduction soon returns.

With small doses of spinal anesthetics of the cocaine series, one observes *only anesthesia*. With larger doses one obtains, in addition, "motor paralysis," which is actually a

*From the Clinic for the Relief of Intractable Pain, Sydenham Hospital. Sterilized Alcohol furnished through courtesy of the Endo Products Corporation, New York City.

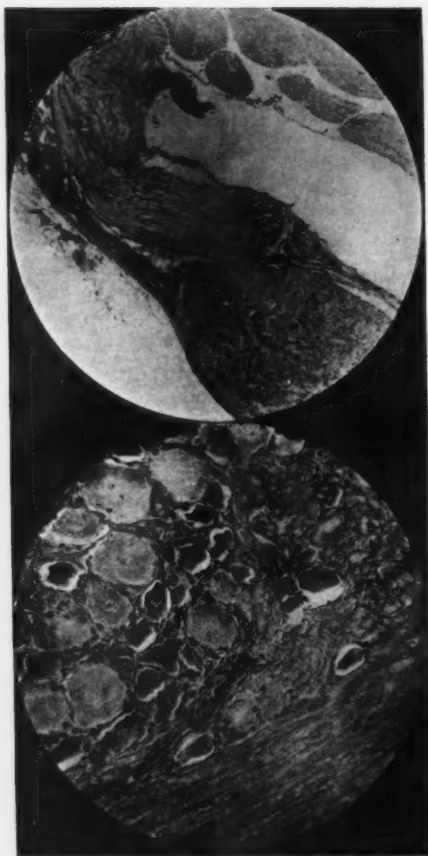


Fig. 1.—(above) Dorsal root ganglion, cauda equina, 24 hours after injection of 95% alcohol into the subarachnoid space. Note infiltration of the ganglion by leukocytes. (Cat. x 430.)

Fig. 2.—Dorsal root ganglion cells, 48 hours after injection of 95% alcohol into the subarachnoid space. Note various stages of degeneration—swelling of cell body and nucleus; dissolution of Nissl substance; eccentricity of nuclei; vacuolization; pyknosis with shrinking of cell; beginning neuronophagia. (Cat. x 600.)

loss of voluntary control due to a complete sensory blockage.

Clinical evidence indicates that alcohol, introduced into the subarachnoid space, will, at a certain concentration, relieve pain and cause only partial anesthesia. This lasts for from several days to as long as twelve months, depending on the dose and method of administration. The exact "active" concentration of alcohol which will cause temporary anesthesia remains to be determined, but is approximately 30 percent. With larger doses, or greater concentration, alcohol produces *somatic motor paralysis*, in addition to the sensory paralysis. This effect is probably due to its action on all the fibers of the dorsal roots, including

the coarsely-medullated fibers. Alcohol, in sufficient dose and concentration, may even affect the anterior motor roots or the cord itself, but these doses are, of course, to be avoided clinically, for they are extremely destructive.

Sixteen minims of 95-percent or absolute alcohol, introduced into the subarachnoid space at any level above the second lumbar vertebra according to the technic described,⁴ should not cause motor paralysis. Injected between the 2nd and 3rd lumbar spines, this dose will invariably cause paralysis of the rectum and bladder; but a dose of 8 minims at this level, should not cause this complication. Below the third lumbar spine, with the pelvis elevated, the larger dose of 16 minims usually does not cause this complication. The highest level at which alcohol can safely be introduced into the subarachnoid space is between the 7th cervical and 1st and 2nd thoracic spines, and the maximum dose here should be 10 minims. These doses apply to the adult male. In the female, the doses should be about two-thirds the male dose, on account of the smaller size of the spinal canal and the structures within it.

In 1931, Loyal Davis, et al.¹³ studied the effects of spinal anesthetics of the procaine series on the spinal cord and membranes in dogs. They found that spinal anesthetic solutions are hemolytic, as well as myelolytic, and seem to act on the myelin of nerve fibers as they do on the lipoids of the red blood cell membrane. A varying degree of inflammatory reaction always occurred in the *leptomeninges* after the use of these spinal anesthetics. Passive changes in the ganglia cells of the gray matter of the cord were similar to those seen in retrograde, or so-called Wallerian, degeneration. Swelling and fragmentation of the axis cylinder and signs of degenerative changes in the *fiber tracts of the cord*, were noted. The changes in the spinal cord were not present after 90 days, so that these changes speak against their permanent nature. No mention was made of any observation on the anterior or posterior roots or the dorsal root ganglia.

Koster¹⁴ found that "spinal anesthesia, induced in autumn frogs, produced histologic changes in the large multipolar cells, particularly in the dorsal region of the spinal cord. These changes consisted of hydropic swelling, loss of distinct outline, bluish staining of the reticulum, dissolution of the Nissl granules, and disappearance of nuclear structure. These changes were transitory, beginning to regress in 6 hours after the induction of the anesthesia and disappearing entirely within 24 hours. No changes from the normal were observed 24 or more hours after the anesthesia. Human cords, examined 22, 36, 96, 144, 192 and 816 hours after spinal

anesthesia, showed no histologic changes from the normal."

I have not obtained any autopsy material following the clinical use of alcohol intraspinally in the doses recommended. That an inflammatory meningeal reaction sometimes results, is unquestionable, on account of the clinical signs of such a condition. This may last from one to several days. A slight increase in the cell count of the spinal fluid is invariably obtained. One case clinically suggested the presence of a localized adhesive meningitis several days after an injection of alcohol.

Laboratory Experiments*

Experimentally, a number of adult cats were used, in which from 8 to 16 minims of 95 percent alcohol were introduced into the subarachnoid space at the level of the mid-lumbar region. The dose used was considerably greater, in proportion, than that used clinically in man. The cats were first anesthetized with ether, and then placed in the lateral-recumbent position. After careful sterilization of the skin, the alcohol was injected slowly by means of a tuberculin syringe and a fine needle, introduced into the mid-line of the back between two adjacent spinous processes.

Only those animals were studied in which there was a perfectly clear spinal tap, and in which, therefore, a direct injection of alcohol into the subarachnoid space was assured.

In each case, the animal was kept in the horizontal position for at least 10 minutes after the injection, and was then allowed to come out of the anesthesia.

Several animals immediately showed some weakness and dragging of one or both hind extremities, lasting from one to five days. Most of them showed no motor disturbances. Sensory tests were not systematically made, this series of experiments being primarily to obtain pathologic material.

The animals were killed by chloroform at intervals of 24 hours, 48 hours, 10 days, 20 days, 32 days and 60 days. The spinal cord and brain were exposed immediately, and numerous sections of the cauda equina, spinal cord and medulla were taken and fixed immediately, with the minimum amount of trauma.

While physiologic blockage is usually evidenced, clinically, by the immediate relief of pain, the immediate loss or diminution of epicritic sensations of pain, temperature and

*These experiments were started on Nov. 23, 1932, at the Columbia Medical Center, and were first reported at a special meeting at the Mount Zion Hospital, San Francisco, Calif., on May 17, 1935. A short time later R. B. Aird and H. C. Naffziger reported on the "Experimental Injection of Ethyl Alcohol into the Lumbar Subarachnoid Space; with Neuropathological Studies (in cats)." *West. J. Surg., Obst., & Gynec.*, July, 1935, 43:377.



Fig. 3.—(above) Dorsal root ganglion, lumbar region, 10 days after injection of 95% alcohol into the subarachnoid space. Note round-cell infiltration, more marked towards center of ganglion; also pyknotic cells and infiltration of peri-capsular fat. (Cat. x 146.)

Fig. 4.—Dorsal root fibers, 48 hours after injection of 95% alcohol into the subarachnoid space. Note earliest changes in myelin sheath, in the form of round and oval globules. (Cat. x 286.)

touch, and by evidences of vaso-dilatation, at this very early stage there are probably no visible organic changes.

The first pathologic organic changes noted were in the cat killed 24 hours after the injection. There was an infiltration of the epineurium of the dorsal roots and, to a lesser extent, of the capsule of the dorsal ganglia, by polymorphonuclear leukocytes and some lymphocytes. Collections of leukocytes were particularly noticeable in the angles between the dorsal roots and the cord. There was also an infiltration of the dorsal ganglia by leukocytes. These changes were noticed in the lumbar region, as well as in the cauda equina (Fig. 1).

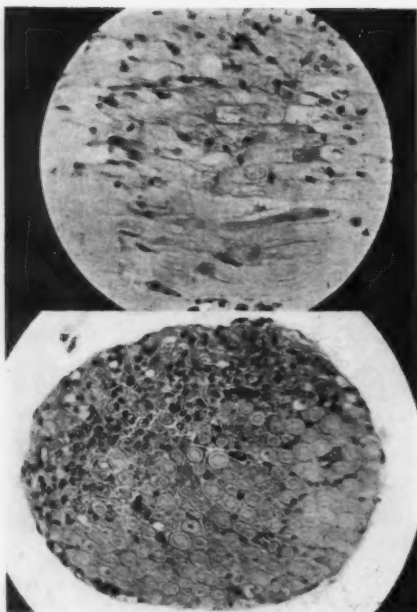


Fig. 5.—(above) Dorsal root fibers, longitudinal section, 10 days after injection of 95% alcohol into the subarachnoid space. Note degeneration, swelling and fragmentation of myelin sheaths in upper portion of slide; more normal fibers below. (Cat. x 380.)

Fig. 6.—Dorsal root fibers, cross section, 20 days after injection of 95% alcohol into the subarachnoid space. Note degeneration of fibers, infiltration, fenestration, multiplication of Schwann cells and compound granule cells. (Cat. x 380.)

Similar changes were noted after 48 hours, and, in addition, a greater infiltration of the dorsal root ganglia. Various stages of degeneration in the cells of these ganglia were noted—swelling of the nucleus and the entire cell, dissolution of the Nissl substance, excentricity of the nucleus, vacuolization, pyknosis, shrinking of the cell, and beginning neuronophagia (Fig. 2). In one animal, in the tegmentum as well as in the reticular portion of the lower pons, a number of arteries showed perivascular infiltration by lymphocytes, monocytes and occasional polymorphonuclears. The exact interpretation and evaluation of this finding must await further observations. It may well be a normal finding in the cat.

In the animal killed 10 days after the injection, a number of lumbar-dorsal ganglia showed moderate infiltration of the pericapsular fat by lymphocytes and monocytes. This was true to a lesser degree of their capsules and the epineurium of the posterior roots. The original polymorphonuclear infiltration appeared to have changed to a round-cell infiltration, and was more marked toward the center of the ganglion than around its periphery. This may have some

bearing on the circulation of the spinal fluid to the ganglion, or the drainage from the ganglion. A number of pyknotic cells appeared in various parts of the dorsal ganglia (Fig. 3).

The earliest changes in the myelin sheath were observed in the animal killed 48 hours after injection. Here the myelin appeared to contain round or oval globules of a clear, light-staining substance (Fig. 4).

After 10 days, the dorsal roots showed swelling and fragmentation of the myelin sheaths and infiltration by leukocytes (Fig. 5).

After 20 days, there was a slight infiltration of lymphocytes in the epineurium of the

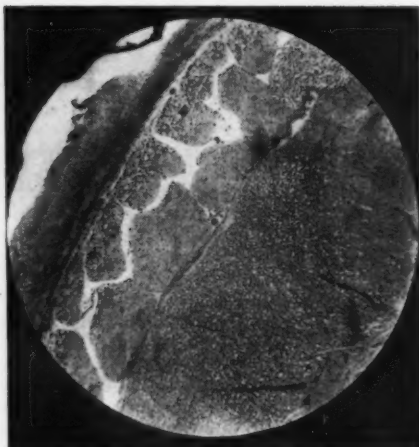


Fig. 7.—Dorsal root fibers, 32 days after injection of 95% alcohol into the subarachnoid space. Note degeneration of dorsal roots and infiltration of meninges. (Cat. x 68.)

posterior roots in the lumbar region. The anterior roots appeared normal. There was also some evidence of degeneration of the myelin sheaths in the posterior roots near the points of emergence from the ganglia. Cross section of the roots showed fenestration and multiplication of the Schwann cells, as well as the presence of compound granule cells (Fig. 6). Other sections in the lumbar region showed considerable degeneration, bilaterally, of the dorsal roots only.

After 32 days, there was considerable proliferation of Schwann cells in the posterior roots, with compound granule cell formation, indicating myelin sheath degeneration. This was considerably more extreme than at 20 days. About the cauda equina, there were moderate numbers of lymphocytes, monocytes and plasma cells in the fibrosed fat. There were also a good many multinuclear giant cells. A number of the posterior roots showed marginal degeneration, similar to that observed in the lumbar region. The

meninges were still infiltrated with leukocytes (Fig. 7).

The anterior roots showed some degeneration and multiplication of Schwann cells. Some degenerative changes were observed in the cell bodies of the dorsal ganglia, similar to those already described. There were no signs of marginal degeneration in the spinal cord.

After 60 days, there was a marked increase in the Schwann cells in the posterior roots near their junction with the ganglia. The infiltration of round cells was less marked. Section of the lumbar region showed that this process had involved the entire length of the posterior roots, from the point of emergence from the spinal cord to the dorsal ganglia. No changes were noted in the cell bodies of the spinal cord or medulla; there were no changes in the marginal zone of the cord nor in the anterior roots. Secondary degeneration of the ascending type was noticed, especially in the dorsal columns of the cord.

No observations were made after 60 days.

To summarize the laboratory findings, a polymorphonuclear infiltration of the epineurium of the posterior roots appeared within 48 hours. This infiltration changed to a predominantly lymphocytic one within 10 days. The infiltration was found in the lumbar dorsal roots, cauda equina and dorsal ganglia of these nerves, as well as in the meninges. Slight degenerative changes in the cell bodies of the dorsal ganglia cells were found after 24 hours, and more definite changes subsequent to this.

The earliest changes in the myelin sheath appeared in 48 hours, and consisted of a breaking up of the myelin into small globules. More marked degenerative changes, marginal and in the posterior roots only, were noted in the animals killed 20 days after injection. Organic dissolution of the fibers occurred somewhere between 10 and 20 days after injection. The progressive organization of this degeneration was clearly observed in those animals killed after 20 days, 32 days and 60 days, so that, in the last animals studied, the healing process was well on its way, as shown by a marked proliferation of Schwann cells and a decidedly less marked infiltration of round cells.

The injection of alcohol did not appear to affect, primarily, any part of the spinal cord itself. The perivascular round-cell infiltration in the lower pons was noted in only one animal, and this may well be a normal finding in the lower animals. Secondary ascending degeneration was found in the dorsal white columns after 60 days.

It is interesting to note that, clinically, out of over 100 intraspinal alcohol injections, only one case developed a rash which simu-

lated a herpetic skin eruption, lasting three days. The marked changes observed in this experimental study probably do not occur clinically, or only to a very limited and mild extent.

Injection into the Cord

As a warning as to what may happen should alcohol be inadvertently injected into the spinal cord itself, the following experiments are recorded:

Several rabbits and cats were injected after deliberate punctures of the cord had been made. These animals developed complete paralysis of the hind extremities, paralysis of the rectum and bladder, and died in a few days.

In a six-months rabbit, 3 cc. of 95-percent alcohol were injected subdurally. Both posterior and left forelimbs were paralyzed immediately. The rabbit was then held up by the forelegs and head, and the alcohol was allowed to rise in the spinal canal. Breathing continued for twenty minutes, but the animal then died. There were no convulsions before death.

That alcohol introduced intraspinally will tend to involve the posterior roots and reach out to the dorsal root ganglia, was clearly demonstrated in a cat into which 8 minims of 95-percent alcohol, stained with methylene blue, were injected. The cat was lying on the right side, the injection was done in the usual manner, and the horizontal position was maintained for 11 minutes. Twenty-four hours after the injection, the animal was killed by chloroform and the spinal canal opened. The methylene blue was seen to stain the dorsal root fans on one side and, to a lesser extent, the anterior root fans. There was a distinct tendency for the methylene blue to extend out of the dura towards the posterior root ganglia. This route is undoubtedly a factor in the normal circulation of the cerebrospinal fluid. The injection was done in the mid-lumbar region, and the methylene blue was found as high as the tenth thoracic nerve, and as low as the third sacral. A slight staining of the marginal zone on the lateral side of the cord was also noted. The cauda equina was not stained.

That sympathetic fibers may be paralyzed by injecting alcohol intraspinally, was shown in a cat in which 1 cc. of 95-percent alcohol was injected into the lower lumbar spine, no spinal tap having been obtained. Four hours after the injection, the cat was up and about, and the posterior half of the body seemed to be insensitive to pin-prick. When held up in front of a barking dog, the cat exhibited its "spitting reflex," but did not show any pilomotor response. There was no evidence of hair raising over the posterior half of the body, including the tail.

Alcohol may be safely used intraspinally

in very small doses, but is destructive, if not fatal, in larger doses, as shown experimentally. Clinically, patients have been free of pain for as long as twelve months following a single injection of alcohol. This relief was not accompanied by any motor paralysis.

The uses and limitations of the usual spinal anesthesia are well known, but attention is called to the pathologic changes herein described, as explaining some late sequelae recently recorded.

Summary

1.—Alcohol introduced into the subarachnoid space produces, clinically, an immediate physiologic blocking of nerve impulses in the dorsal roots. Spinal anesthetics of the cocaine series likewise do this. Both have an apparent neurotropic action on the dorsal roots only.

2.—Clinically, the sensory and motor effects of spinal anesthetics of the cocaine series wear off within a few hours, depending on the dose used. The effects of alcohol seem to be more permanent. Following the use of 95-percent or absolute alcohol in small doses (under 16 minims), diminution or loss of touch, pain and temperature sensation may ensue and last several months. Severe, intractable pain may be relieved for as long as twelve months following a single injection. With these small doses there is no motor paralysis. With larger doses, one may cause a loss of muscle, tendon and joint sense, or even a permanent motor paralysis. There is definite evidence that sympathetic nerve fibers may be affected by intraspinal injections of alcohol.

3.—Varying degrees of inflammatory reaction in the meninges result from the injection of spinal anesthetic solutions.

4.—After 24 hours, alcohol causes the myelin in the dorsal root fibers to appear broken up (cats—Stern). No such changes have been described for the other anesthetics (dogs, frogs, human beings).

5.—Alcohol in small doses does not appear to affect primarily any part of the spinal cord itself (cats—Stern). Other anesthetic solutions may cause passive changes in the ganglia cells of the gray matter (dogs—Davis, Haven). Transitory changes have been noticed in the large cells of the dorsal region of the cord, in frogs (Koster, Kasman). In man, no histologic changes from normal have been

found after 22, 36 and 96 hours, and 6, 8 and 34 days after regular spinal anesthesia (Koster, Kasman).

6.—Secondary degeneration of the ascending columns of the cord has been observed 32 days after alcohol injection (cats—Stern). Similar changes have been described following other spinal anesthetics, but not after 90 days (dogs—Davis, Haven).

7.—The physiologic and pathologic effects within the subarachnoid space depend, not only upon the different chemical constitutions of the solutions used, but also (and this is just as important), on the actual concentration of the solution as it comes in contact with nerve tissue. Alcohol does appear to have a more destructive action on nerve tissue than do the anesthetic solutions of the cocaine series. Extreme care should, therefore, be used in injecting alcohol intraspinally.

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ADEQUATE MEDICAL SERVICE

It is probable that adequate medical service is available in this country for every one who has the initiative and energy to obtain it, at least so far as the physicians themselves can supply it. But for the improvident and for the waster, who dissipates his income on unnecessary luxuries and installment purchases, there is considerable difficulty.

The social scientist, however, would provide medical service for this group, whether they deserve it or not.—DR. ALEXANDER H. COLWELL, of Pennsylvania.

Progress in Mental Hygiene

By Frederick L. Patry, M.D., Albany, N. Y.
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MENTAL hygiene recognizes no depression. During the year 1935, the output in books, pamphlets, mental hygiene periodicals, special articles on mental hygiene subjects, in almost every type of medical and lay journal, newspaper feature write-ups and syndicated articles pertaining to the field of mental hygiene has been more voluminous than ever. Surely this is indicative of a quickening of medical and lay consciousness of the meaning and significance of mental health.

In one way or another, every area of human interest and endeavor has been colored with mental hygiene theory, principles and practice. It becomes obvious, therefore, that this summary of mental hygiene progress for the year can touch only certain of the high spots in terms of significant trends. A bibliography is appended wherein the reader may find a few carefully culled references which have seemed to me to be important contributions to this rapidly growing specialty and an integral part of all medicine and its branches.

It is gratifying to note the spread of mental hygiene in the direction of *child-guidance clinics*. During the past year, more progress has been made in the creation of new clinics and in the greater utilization of old ones than at any time since the depression. This is partly due to a more or less continuous educational program in mental hygiene through the activities of the National Committee for Mental Hygiene, State Mental and County Hygiene Societies and local organizations, including parent-teacher associations, child development and parental education groups and mother study clubs.

In connection with the extension of mental hygiene interest, it is encouraging to note an absence of any propaganda flavor, which was prone to color the earlier activities of those promoting this new development. We now see interest and support of this work growing out of actual mental hygiene clinics and educational service. Inspiration and enthusiasm are gained through scientifically conducted surveys of a national, state or local character.

Mental clinic and child guidance centers are objective, evaluating their work to see wherein their contributions may be increased through a better understanding of the nature of their problems, the conditions under which they arise, the multiplicity of results and the multiplicity of causes or variables which gave rise to them, how unsatisfactory conditions may be prevented or modified, and how we may put our impressions to a controlled test,

in order that we may profit from the best scientific consensus.

Special grants are being and have been obtained to deal with such challenging problems as schizophrenia or dementia precox, the extent of mental hygiene integration in teacher education and practice, the mental hygiene needs in public health surveys, the study of possible contributions from the field of psychoanalysis and a host of other worthwhile projects.

Medical Cooperation

Of promising import is the increasing evidence of the integration of psychiatry and preventive psychiatry or mental hygiene with other divisions of medicine. Although mental hygiene and psychiatry are sufficiently large and intricate to merit specialized study, yet future progress essentially depends on the extent to which mental hygiene theory and practice permeate every branch of medicine, particularly general practice. The number of papers appearing in this connection is increasing. Common sense is now recognizing the need of scientific training. No one would be so naive as to attempt to practice surgery without specialized education and experience. How much more should we prepare ourselves for dealing scientifically with the surgery of the psyche! Surely this most complex and highest level of integration of the person should demand as much skilled treatment as the less intricate areas of the human organism.

Although the American Psychiatric Association is the oldest medical organization in the United States, having held its 91st annual meeting in Washington, D. C., in 1935, it is only this year that standards of qualification for official recognition of specialist status in psychiatry have been established and an examining board created. The **American Board of Psychiatry and Neurology** has been incorporated through the conjoint action of the American Medical Association, the American Neurological Association, and the American Psychiatric Association. Anyone wishing to gain official recognition as a specialist in psychiatry or neurology or in both these specialties must meet the required standards of medical education and experience. A minimum of five years in psychiatry, following one year's general hospital internship, is now required, as well as a comprehensive oral examination, given by members of the Board at designated times and places throughout the country. The first of these examinations

was given in Philadelphia in May, 1935. The creation of The American Board of Psychiatry and Neurology, Inc., is the most important event of the year from the standpoint of furthering professional training and in protecting the public from inadequately trained "specialists."

It is interesting to note the rapidity with which psychoanalytic theory and technics are being taken over, in modified form, in general psychiatric understanding and handling of its problems, but particularly in psychiatric social work. More interest is being shown in child psychoanalysis and child psychiatry. American psychiatrists are returning from abroad, after specialized training with child psychoanalysts, and putting into practice such experience, in various forms, in this country. Foundation support has been obtained to carry on a Psychoanalytic Institute in Chicago, under the direction of Dr. Franz Alexander. He and his colleagues are carrying on a research and training center which is well worth watching.

Of outstanding importance from the standpoint of *integrating psychiatry with medicine* was the Third Conference on Psychiatric Education, held in Washington in May, 1935. This conference concerned itself with the *integration of psychiatry with pediatrics*. Under the chairmanship of Adolf Meyer, various discussions by pediatricists and psychiatrists centered upon pooling of experiences and their evaluation. It is gratifying to see psychiatrists sharing common problems to a greater extent with pediatricists. The place of clinical child psychiatry in pediatric practice and education, the teaching of psychiatry from the viewpoint of the pediatrician, responsibility of the psychiatrist to the pediatricist, and opportunities for liaison work in a child research council were some of the topics brought to the front. The need of understanding and treating the child as a whole was emphasized, particularly the emotional and social aspects of the child's life.

In a similar vein, Wile challenges the doctors to take a new view of their opportunity and obligation in understanding the nature of child maladjustments and their treatment. The physician should function more as a medico-social clinician, whose chief job is to contribute to health and the enjoyment of living. Psychic and emotional health are as real as physical health. The physician must study the child, not as so many separate parts or systems, but as a unitary, reacting organism, whose mainspring is the emotional-instinctive component of the personality. Doctors must concern themselves with the total health of children and become more intelligent in child guidance problems. Many forward-looking persons feel that we need a new type of physician—one educated in human biology to

understand the science of man on all levels of integration, mental, emotional, personal, vocational and social, as well as physical.

An outstanding contribution to furthering the interests of mental hygiene has been the publication of a report of a survey in graduate instruction in psychiatry, by Ebaugh. His report is based on the study of psychiatric teaching in twelve leading medical schools. Instruction in psychiatry, like that in other branches of medicine, is in a transitional stage. More emphasis is being placed on the coordination of teaching, as well as in clinical work. Graduate psychiatric education should not be considered as an isolated part of medical education. Medical education and practice cannot be separated. The psychiatric needs of communities as well as individuals must be better served. Medicine must look beyond sick humanity and concentrate more and more on the positive side of promoting health, happiness, efficiency and social adaptation.

Psychic Prophylaxis

Although mental hygiene interests were originally concerned with the amelioration of the institutional care of the mentally sick, of recent years emphasis has been placed upon prevention of nervous and mental disorders, social maladjustments and anti-social behavior. In view of the alarming increase in delinquency and crime, the Governor of New York State called a conference on "Crime, the Criminal and Society," in October. The outstanding penologists, lawyers, police officials, clergymen, educators, psychiatrists, social workers and others intimately concerned were invited from various parts of the country to participate in a frank and free discussion. The complete transcript of the proceedings was published, with the hope that a greater understanding of the crime problem as a whole and intelligent action may result. Besides general sessions and a special broadcast to school children, round table discussions on crime prevention, detection and apprehension; prosecution and the court; institutional care; and probation, parole and rehabilitation were conducted.

The annual meetings of associations whose major aim is the understanding and treatment of varying degrees of mental hygiene problems were unusually fruitful in their contributions. The twelfth annual meeting of the American Orthopsychiatric Association was held in New York in February. Mention is made here of a section meeting, Psychiatry and Education, which proved of decided value in gaining a better grasp of the mental hygiene aspects of professional education. Similarly at the annual meeting of the American Psychiatric Association, in Washington, in May, 1935, a novel feature was a "Symposium

on Education—Psychiatric Implication." Psychiatrists who have specialized in child guidance discussed mental hygiene problems on the nursery school, elementary, secondary and college levels.

Of unusual interest was the special session on mental hygiene, held in connection with the annual meeting of the American Public Health Association, at Milwaukee, Wis., in October. Mental hygiene was discussed from the point of view of the state, the U. S. Public Health Service, a city health department, the health officer and the school physician.

A much needed positive note in dealing with problems of social maladjustment was sounded by Allen, at the National Conference of Social Work, held in Montreal, Canada, in June. It was felt that interest should be shifted from the weaknesses to the strengths of people in distress, in order that the individual may manage his own reality with his own energy. The effective utilization of individual assets and what a man can constructively make himself responsible for without denying the weaknesses he may possess, is our major problem.

The psychologic and emotional aspects of the relief situation were discussed at the annual meeting of the New York State Committee on Mental Hygiene, in June. About 17 percent, or one-sixth of the total population of the State, is on relief. This has been a terrific burden on the mental health of those reduced to a subsistence allowance. The effects of the economic depression on mental health are focused upon in an article by Patry, who refers to the statistics of the National Committee for Mental Hygiene and the New York State Department of Mental Hygiene.

An experimental approach to the integration of psychiatry and mental hygiene is elaborated upon by Tallman. It is felt that the first line of defense in an organized mental hygiene program strategically lies with the classroom teacher.

The most outstanding book of the year, in popularly sensitizing public opinion to the science of man as a whole, is, in my judgment, "Man, the Unknown," by Alexis Carrel. Every physician would do well to give serious thought to the challenge which this savant brings to our doorstep. The medical man of the future must have a much broader understanding of human nature and learn to serve his patients on all levels of integration.

A list of a few of the publications in the

field of mental hygiene interest is appended. For further references, the reader is referred to the bibliography prepared by the National Committee for Mental Hygiene.

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A New Therapeutic Agent in Urologic Infections

By Francis H. Redewill, M.S., M.D., San Francisco, Calif.

IN 1928, some English clinicians presented to the medical fraternity a polyvalent antibacterial agent for use in endotoxic infections and infectious diseases. This product, known as **Edwenil**, although not a foreign protein, is claimed by some authors to act as such¹. It is, however, much more potent and effective than any foreign protein at present available and, because of its results, is arousing wide-spread interest among the profession. Much enlightening information regarding the use of **Edwenil** in a large variety of infectious conditions has recently been reported by a number of physicians and clinical laboratory workers. One of the early clinical papers² by J. Montgomery Anderson, a Harley Street specialist, credits this method with advantages that transcend those of the various bacterial vaccines, non-specific proteins and specific serums. More recently, a collection of clinical reports has been compiled under the title, "The Oakmont Papers on Immunology"³.

Before presenting my own clinical data, it will be well to discuss briefly the nature of **Edwenil** and its mode of action. It is a derivative from tissue proteins that have been denatured by combining them with calcium. It is separated from normal horse serum and beef-muscle extract by means of a calcic saline solution, the final product being a deproteinized flocculus (total nitrogen, 0.04 percent), suspended in 0.5 percent phenolized saline solution. It is administered by subcutaneous or intramuscular injection in a large list of endotoxic infections and infectious diseases.

Regarding the action of **Edwenil**, it may be stated that it stimulates the resistance mechanism of the body against infection. This has been abundantly proved by laboratory work, as the following reports demonstrate. It stimulates a polymorphonuclear leukocytosis and increases the phagocytic action of each leukocyte (raising the opsonic index). The blood of **Edwenil**-treated human beings inhibits the growth of organisms. Animals that have been treated with **Edwenil** prior to an induced staphylococcus peritonitis survive, whereas untreated controls die.⁴ When laboratory animals are infected with live attenuated bacteria before **Edwenil** is given, its administration will clear up the infection, whereas the controls that do not receive this preparation die promptly or continue to harbor the infection for weeks.

When **Edwenil** is given over a period of time to chronically infected human patients with a definite toxic index, as indicated by

the Schilling leukocyte differential blood-count (shift to the left), the toxic index improves with a definite shift to the right in the count.

Since immunology is not an exact science, the consideration of how **Edwenil** increases and stimulates the body resistance is bound to be theoretical, in part at least. Nor do we have the opportunity here to go into a lengthy discussion of the subject. We now know, however, that antibacterial substances are derived from the reticulo-endothelial system and also from the endocrine glands. They are possibly in the nature of hormone precursors or catalytic sensitizers. Since **Edwenil** stimulates an increased opsonic index and produces a certain degree of immunity, this agent unquestionably must be a powerful stimulant of the reticulo-endothelial system in supplying antibodies.

In another paper I shall report, in detail, some of the work demonstrating the protective action of **Edwenil** in animals in which infection has purposely been induced. Some investigators^{5,6} believe that certain endocrine secretions, such as the gonadotropic principle of pregnancy urine, epinephrin and the cortico-adrenal hormone, do actually inactivate bacterial toxins. They even go so far as to say that susceptibility to both diphtheria and poliomyelitis is the result of some endocrine deficiency.

From these and numerous other investigations, we must conclude, not only that the reticulo-endothelial structures play a direct part in combating infection, but also that the endocrine glands also exert their influence; that the two systems work hand in hand. This being the case, it is believed that **Edwenil** must act by stimulating both the reticulo-endothelial cells and the glands of internal secretion. It is not known whether it directly stimulates the outpouring of hormones, or merely acts indirectly, as by a stimulus to some catalyzer. Personal experiment has shown, however, that the urine of **Edwenil**-injected pregnant rats contains much larger amounts of the gonadotropic hormone than the urine from untreated control animals, and, furthermore, that the former has a more pronounced bactericidal action than the latter.⁷

Having used **Edwenil** with success for more than three years in many medical and surgical conditions and complications in urologic practice, and having interested many colleagues in its use, I thought it apropos to report a few examples of the results we are obtaining with this agent. It can be used to

advantage in such a large list of endotoxic infections that it must suffice here to report on only a few of the types of infection in which we have come to depend upon its service.

Colds

Scores of cases of "common cold" have been aborted with one or two injections of Edwenil. This agent seems to be more definitely effective in acute upper respiratory infections. At least, it is remarkably successful in the treatment of colds, all semblance of infection often disappearing after one injection.

Pneumonia

Edwenil is an outstanding measure in treating pneumonia. The results are often astonishing, as illustrated in the following genitourinary cases in which this disease was a complication:

A man, age 62, underwent a prostatic resection, and six days postoperatively, his temperature was 104.6° F. X-ray pictures of the chest showed bronchopneumonia. Four (4) cc. of Edwenil was given in the evening, and next morning the temperature was 101.2°, when another 4 cc. was given. Twenty-four hours after the first injection, the temperature was normal. Treatment was continued with 2 cc. daily for three days, and the fever never returned. The patient was discharged, to report to the office for follow-up on postoperative care.

A female, age 42, had acute pyelitis and cystitis, her temperature ranging from 102.5° to 105° F. X-ray pictures revealed scattered consolidations around the bronchial tubes; diagnosis, bronchopneumonia. Four (4) cc. of Edwenil was given at once and repeated twelve hours later. In twenty-four hours the temperature was normal. Two days later it rose to 102°, but following another injection of 2 cc., it fell to normal.

Postoperative Fever of Undetermined Origin

Surgeons are well acquainted with the fever that develops two or three days after an operation and may run on for several days or even a week or more. Although there is nothing to be found in the chest, kidneys or operative wound to account for this rise in temperature, it is nevertheless annoying. The patient is listless, has no appetite and does not recover from the operation as he should; yet there is nothing alarming about his condition. In the old days, such a temperature was explained as a "stitch abscess." Now, with ideal preparation of the skin, the use of perfectly aseptic ligatures, and with no secondary wound infection, this protracted fever often occurs. Edwenil plays a remarkable rôle in such cases. Two injections of 2 cc., twelve hours apart, in most instances will clear up this postoperative fever. I have seen scores of cases in which this has been accomplished.

Burns

With the foregoing indeterminate febrile toxemia in mind, another related condition may be mentioned. In third-degree burns involving extensive areas, in which the modern open method of treatment and tannic-acid spray are employed, the resistance of the patient is low, and there is usually considerable toxic absorption. Although the patient is given large amounts of dextrose intravenously, he still has a continuous fever.

I recently saw just such a case, with a toxic, remittent fever that had been running along for five weeks. Because of the evident inability to overcome the toxemia, the greatly lowered resistance, and excessive weakness, we all thought this patient had very little chance to recover. Finally, when the fever remained around 103° and pneumonia was suspected (although the lungs were found to be clear), I started giving him Edwenil, 2 cc. every twelve hours; and, to increase the receptivity of the system to this measure, I also gave 0.5 cc. of Adreno-Cortin every twelve hours. The patient's response to this combined treatment was very encouraging. The temperature dropped to normal in five days, with noticeable improvement in every way; in fact, the picture was entirely changed. His appetite returned, periods of irrational state cleared up, and his voice, which had been only a whisper, became normal. Ten days after the institution of this new treatment, the patient was able to go home, where he had an uneventful convalescence. This is a typical experience, and I have collected from my colleagues six other somewhat similar ones, in which the combination of Edwenil and Adreno-Cortin was used with equally gratifying results.

Acute Specific Urethritis

The details of the treatment of a large series (90 cases) of acute urethritis with Edwenil and other new treatment will be reported in a subsequent paper. From 2 to 4 cc. of Edwenil was given daily, and in 78 percent of these cases the amount of urethral discharge was increased within from three to five days, and the average duration of the urethral discharge was ten and a half days. In control cases of gonorrhea that did not receive Edwenil, the average duration of urethral discharge was fourteen days. By doubling the dose of Edwenil and giving Cutter's vaccine and Corbus' filtrate, in a group of twelve cases, we succeeded in reducing the average duration of the urethral discharge to eight days. There was, not only a more rapid subsidence of symptoms, but also a surprising absence of complications.

Herpes Zoster

This troublesome and painful skin eruption, for which scores of drugs are suggested in

therapeutic manuals, seems to respond almost specifically to Edwenil. During the past three years, we have accumulated the records of 14 cases of herpes zoster that have been cured by giving four 2-cc. injections of Edwenil at twelve-hour intervals. After the third injection the lesions begin to dry up, and soon all symptoms of itching, burning, pain, and discharge disappear completely.

Acute Arthritis

Some of the most remarkable results with Edwenil have been seen in acute arthritis. Time and space forbid differentiating between the various types of arthritis; suffice it to say that it is not claimed that this measure can aid in curing the hypertrophic or structural types of the disease. However, in many cases of the commoner types of arthritis complicating the urologist's problems, such as those caused by focal infection in the prostate, seminal vesicles, urinary bladder, and colon, and also in subacute gonorrheal arthritis, Edwenil is an effective remedy. My own experiences in this respect amply confirm the work of Dillingham.⁸ The following cases are typical:

A man, age 28, with badly infected prostate and seminal vesicles and a variable urethral discharge for four years, developed arthritis in his knees and ankles during that period. The stiffness became so severe that he had to use crutches. There was also an acne rash over the ventral surface of the thighs, which dated back to the beginning of the arthritis. Gonococci were found in the pus from the prostate and seminal vesicles. Treatment for the infected prostate and seminal vesicles was instituted, including massage, irrigations, instillations, diathermy, and vaccine. Although the focal infection and rash gradually began to clear up under this treatment, the patient was still crippled with the arthritis, and was unable to work. He responded to the first injection of Edwenil, and after six doses he was able to resume work. Incidentally, the acne residue cleared up rapidly.

A man with severe arthritis in the ankles, involving the Achilles tendon and the bursa of the plantar surface of the foot, was found to have a focal infection in his prostate. As he could barely walk, he had not been able to work for two months. Following only three injections of Edwenil, the pain and stiffness in his joints cleared up so that he could go back to work. After eight injections had been given, together with routine prostate treatment, the arthritis disappeared.

Pyelitis and Pyelonephritis

In conclusion, I shall mention two cases of upper urinary infection that responded unusually well to this treatment:

A woman, age 25, with temperature ranging from 101.5° to 104.5° F. and with pain radiating from loins down to the bladder region, was found, under cystoscopic examination, to have pyelitis. Various treatments were used, with no effect upon the tempera-

ture and other symptoms. After the second injection of Edwenil, the temperature dropped to normal. Edwenil was continued in 2-cc. doses every twelve hours, with routine treatment, and recovery ensued rapidly.

Following an attack of severe diarrhea, a little 6-year-old girl developed bilateral pyelonephritis with high temperature. After the first injection of 1 cc. of Edwenil, her afternoon temperature dropped two degrees and, after the second, it became normal, and recovery was complete in ten days, with no later complications.

Since experience with Edwenil is likely to arouse enthusiasm regarding its use as a routine antibacterial measure, a word of warning should be given regarding its misuse. It is *contraindicated* in all closed infections or wherever there is not adequate drainage, as in epididymitis, periurethral abscess, pyosalpinx, acute cholecystitis, or gangrenous appendix. The increased defensive forces stimulated by Edwenil produce a great outpouring of leukocytes for the first few days. Hence, if this measure should be used in the presence of an enclosed purulent infection, the increased exudate would cause painful pressure and might aggravate the symptoms. In several of the conditions mentioned, it may be tried with very small initial doses—0.5 to 1 cc.

Conclusions

1.—Edwenil is a new and promising agent for use in combating many infections. It is given by subcutaneous or intramuscular injection in doses of from 1 to 4 cc., and produces very little subjective reaction.

2.—Laboratory and clinical demonstrations have shown this agent to be without a peer in increasing the defense mechanism, reducing temperature, and quickly overcoming endotoxic infections.

3.—Edwenil can be used effectively in all the endotoxic infections that occur in the practice of urology. The results obtained in many of our cases have been remarkable.

4.—Special attention must be paid to the matter of adequate drainage and, where this is questionable, initial doses should always be small.

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Flood Bldg.

Progress in Clinical Urinology

By Clifford Mitchell, M.D., Chicago

KNOWLEDGE of a history of self-medication or of previous medication in the case of any patient we are called on to treat is, obviously, an important thing for the physician in charge to possess. But the fact is also obvious, that such history is not always easy to secure. Hence this article, which, it is hoped, will be an eye-opener to those who do not fully comprehend the vogue of self-medication in 1935.

I encountered my first eye-opener during the last part of the previous century, when compounds like those of hexamethylene, liberating formaldehyde, were introduced.

In a urine specimen which I was examining about that time, indican and pus were found abundantly present. The specimen had an unpleasant "fishy" odor and there was history of long-continuing constipation. Culture, naturally, showed colon-type bacilli and the patient was put on a formaldehyde-liberator. Subsequent examination of the urine showed pus as before, but no indican, although other normal constituents were present as usual. No doubt indol was formed, as before, but oxidation into indican was prevented by the reducing action of formaldehyde, and no blue color resulted. I have observed a similar absence of indican reactions in many cases, when formaldehyde-liberators have been administered. In the case mentioned above, treatment was suspended for a few days and the indican reaction returned.

Again, in another case brought to my attention about this time, a certain patient suddenly manifested symptomless hematuria. A growth was suspected but, acting on the advice of Dr. Chas. W. Purdy, the case was investigated from the viewpoint of internal medication, and an admission was secured from the patient, that he had taken, of his own volition, a formaldehyde-liberator, without much regard to the matter of dose. Acting on Dr. Purdy's advice, all medication was suspended, and the bleeding soon ceased. Later, when cystoscopy became available, the cystoscope showed no growth, and no further hemorrhage took place. At that time little or nothing was known about the effect of formaldehyde on the urinary tract but, since then, evidence has accumulated, I am told, that drugs of this type may, on occasion, cause urinary hemorrhages.

Nowadays, self-medication has become so common as to make it advisable for the attending physician to make personal tests of the urine of certain patients, since the expense of laboratory examinations is, in certain cases, prohibitive.

Medically speaking, personal examinations of urine made by the physician in charge are subject to a number of "nuisances," among which the following may be mentioned: stale urine, heat, test tubes, exact measurements, and "dish-washing."

Stale Urine

The first and foremost nuisance is a not-unusual tendency on the part of interested parties to supply the doctor with urine which has been exposed to the air in a warm place, or voided into a dirty container. Even in hospitals meticulously careful in all other respects, stale urine may be handed out for examination to the intern or physician in charge. It may seem childish to study ways and means by which stale urine can be distinguished from fresh, but I should certainly be derelict in my duty, if I did not devote at least a paragraph or two to this subject.

Stale urine is cloudy and has an unpleasant smell—in some cases an almost frightful odor. It swarms with bacteria and cannot be filtered clear by ordinary methods of filtration. Tested for albumin, the findings are uncertain, since a haziness obscures the test results. Under the microscope the sediment always contains phosphates, appearing either as dirty, shapeless masses when viewed with a low-power lens, or as small specks with the high-power. Coffin-lid crystals of ammonio-magnesium phosphate are almost always seen and, in certain cases, the telltale crystals of ammonium urate. (See Mitchell's "Modern Urinology" for illustration.)

Chemical tests to be used on suspicious specimens are the Griess-Ilosvay test for nitrites, and Mitchell's flotation test, using Winkler's modification of Nessler's test for ammonia. *In general, any urine soon yielding a dark, almost black, color with Winkler's test, is fresh enough to examine.* Any one examining urine will save much time and avoid annoyance by thoroughly familiarizing himself with Winkler's test, which will be described later on in this article and is to be found nowhere else, at this time, save in **CLINICAL MEDICINE AND SURGERY** for January, 1935.

The sediment of stale urine may be more or less soluble in 50-percent acetic acid, but swarms of saprophytic bacteria always remain undissolved. I know whereof I speak, when I lament the waste of the time spent in the United States, in trying to learn something from a tedious study of stale urine.

Care must be taken, whenever a positive Winkler test for ammonium carbonate is

obtained, not to overlook cases, especially in old men, of retention of urine, with decomposition of urea into ammonium carbonate. These cases are common with enlarged prostate, bladder paralysis, stone, etc. Any case where the body odor or room odor suggests ammonia should be investigated from this angle.

As a general rule the attending physician should personally and carefully examine the urine of any urinary case, and not decide on it from a "bottle of urine" handed out by an attendant. Remember that neither the laboratory nor any of its technical ramifications will ever displace the observant eye of the trained clinician.

The Self-Medication Nuisance

This article will consider recent developments in clinical urinalogy, relating principally to the detection of drugs in urine. With this end in view, I have developed a method of urine examination, essentially new and suited to the proficiency of the general practitioner.

Apparatus

Four-inch test tubes and ordinary medicine droppers.

Small, colored reagent bottles, of the kind provided with bakelite screw tops and droppers.

Dishes providing a white, waterproof surface, such as fiber "butter chips" coated with white enamel, or fruit-jar cap-liners of vitrolite or porcelain, sold by Ball Brothers, Muncie, Indiana.

With this apparatus, tests of urine, to be described later on, can be made, which, while not positively identifying all drugs found in urine, will in many cases furnish clues which may enable the attending physician to question the patient confidently, and in most cases to secure an admission of self-medication.

Reagent Solutions and Technic

Only five of the large number of drugs advertised to the laity can be considered in this article: Sodium bicarbonate; sodium phosphate, U.S.P.; sodium sulphate; salicyl compounds (aspirin); and phenolphthalein, as found in laxatives.

For the simple clinical tests to be described, one requires nickel sulphate, 20-percent solution; ferric chloride, three solutions, of 20, 5 and 1 percent; and Winkler's modification of Nessler's solution (see Hawk's "Physiological Chemistry," 6th edition,¹ for formula and directions for making)*.

**Winkler's Solution*: Mercuric iodide, 10 Gm.; potassium iodide, 5 Gm.; sodium hydroxide, 20 Gm.; distilled water, 100 cc. Grind the mercuric iodide in a mortar, with a little water; add the potassium iodide and wash all into another container; dissolve the sodium hydroxide in the rest of the water and add to the first mixture; shake well, let stand, decant off the supernatant fluid and keep it in a dark-colored bottle.

The clinical laboratory methods supplementing the simple tests we advise, are the hypobromite solution used in the Doremus ureometer, and the apparatus and technic used for determination of phosphoric anhydride (described in Mitchell's "Modern Urinology").²

In general, the following reagents may be needed: Stronger ammonia, glacial acetic acid, and crystals of sodium nitroprusside.

Effects of Certain Drugs on the Physical Characteristics of Urine

Effect on the Specific Gravity of Urine: Few physicians realize the effect of water-soluble drugs on the specific gravity of urine. Prominent among these drugs is sodium bicarbonate, 15 grains (1.0 Gm.) of which, in a certain case I saw, increased the specific gravity of 100 cc. of the urine from 1.021 to 1.028.

Important, clinically, is the fact that determination of "fixed" specific gravity, so vigorously demanded by certain clinicians, may be impossible when sodium bicarbonate is being taken by the patient. Sodium phosphate and sodium sulphate also increase the specific gravity.

Effect on Titration Acidity: Not only do alkalies and other soluble salts increase the specific gravity, but they also exert no small action on the titration acidity and on the hydrogen ion concentration. Sodium bicarbonate may, paradoxically, increase the titration acidity, by interfering, apparently, with the end-reaction with phenolphthalein, while, at the same time, it increases the hydrogen ion concentration. The titration acidity has repeatedly been increased, in my cases, as much as 5 degrees, while the hydrogen ion concentration was found to be as low as 6.8.

Sodium bicarbonate internally is but feeble in its power to alkalize the urine, 100 grains (6.6 Gm.) or more sometimes being required to cause the urine to turn red litmus distinctly blue, or to make blue litmus paper still bluer. Sodium phosphate, however, has reduced the titration acidity 5 degrees or more in cases I have examined. This applies to the U.S.P. phosphate, but not necessarily to the effervescent preparation. One gram of the U.S.P. phosphate, added to 100 cc. of the urine, has decreased the acidity from 52 degrees to 48.

Value in Malpractice Suits: Detection of drugs in the urine, with a suspicion of self-medication, may prove to be of value to the doctor in defending malpractice suits, since it may enable the attorney for the defense to argue that the patient bringing suit did not strictly comply with the treatment prescribed by his physician.

The effect of self-medication, carried on simultaneously with other internal medication prescribed by a physician, is so obvious in its

possibilities for untoward results as to require no special notice here.

Detection of Sodium Bicarbonate in Urine

When sodium bicarbonate is taken by the patient, stomach conditions are the clinical features most likely to be in evidence, with complaints of "gas." The patient's complexion often tends to be sallow. Litmus paper cannot always be depended upon to show alkalinity, since in certain cases enormous doses of the drug are necessary to overcome the acidity of the urine.

An easy household test for sodium bicarbonate in the urine is to add equal parts of vinegar to the urine in a well-corked bottle and shake it. If the tight cork is blown out by the gas liberated, there is certainly plenty of bicarbonate in the urine, or some other carbonate is present. This test is not striking in the case of highly acid urine, containing only a small amount of the bicarbonate.

To suspect the presence of sodium bicarbonate in the urine, watch the specific gravity. In the absence of albumin and sugar, sudden jumps upward of the specific gravity should make the physician strongly suspect the presence of bicarbonate in the urine, since this drug leads almost all others, commonly used by self-medicators, in its power to raise the specific gravity of the urine above what it is in the drug-free urine of the same person.

Next in order, determine the percent of urea, or have it determined by some competent person. The finding of a low percentage of urea (one percent or less), taken in connection with a high specific gravity (1.020 or upwards), when sugar is absent, is one of the surest signs of the presence of sodium bicarbonate in the urine of any person suspected of self-medication.

To be sure of the presence of abundance of soluble carbonates in urine, it is only necessary to use my nickel sulphate test, described in *CLINICAL MEDICINE AND SURGERY* for March, 1928.³ The test by contact may show 0.6 percent of the bicarbonate or upwards, but is not trustworthy for smaller amounts. A more delicate method for sodium carbonate is my flotation test with mercurous nitrate, two-percent solution, as follows:

To 5 or 10 drops of urine on any white, water-proof surface, add 5 to 10 drops of the mercurous nitrate solution and await results. If bicarbonate is present, the edges of the mixture will begin to darken in about 10 minutes, if as much as 0.2 percent is present; but 0.1 percent takes longer—15 to 20 minutes. Other carbonates may respond to this test, but sodium phosphate (not effervescent) does not similarly darken, even if a solution as strong as a one percent is present.

All these urine tests for sodium bicarbonate depend on the known absence of ammonium carbonate, in quantity larger than normal.

My flotation test for abundance of ammonium carbonate in urine makes this differentiation easy, and is as follows:

Winkler's Test: To 5 or 10 drops of urine on a white surface, add one or two drops of Winkler's solution. If the urine is normal, a small red spot is seen, which immediately disappears, and the urine soon turns almost black; if ammonium carbonate in more than normal in amount is present, a large, increasing, fairly-persistent red coloration is seen. When this happens, tests for sodium bicarbonate are not trustworthy in results and should not be attempted.

Physicians not especially trained in chemistry, should order Winkler's solution from pharmacists or dealers, and should not attempt to make it themselves.

Finally, a large amount of sodium bicarbonate in urine is easily detected by mixing equal parts of the suspected urine and of two-percent mercurous nitrate solution. A copious white precipitate is formed in all cases, which stays white in normal urine or when only a small amount of bicarbonate is present, but which may darken before it has time to settle when bicarbonate is plenty in the urine. Absence of darkening should lead the physician to try my flotation test (already described) for small quantities and for purposes of differentiation from other soluble alkalies, especially sodium phosphate.

Detection of Sodium Phosphate in Urine

The U.S.P. sodium phosphate is here considered. Patients taking this drug give a history of constipation, with taking of laxatives. The urine obtained after a laxative dose of this salt should show a higher specific gravity, lower titration acidity and a higher hydrogen ion concentration than are usually discovered on examination, pH values around 7 being not unusual. The most striking effect in the urine is the marked lowering of the urea-phosphoric anhydride ratio; but as this requires chemical training for determination, the physician should try, first, Winkler's solution and, second, the flotation test with mercurous nitrate.

The test with Winkler's solution is as follows: Mix equal parts of this solution and urine. The precipitate formed in the presence of sodium phosphate will be dark-gray in color; but, if bicarbonate is the drug, much lighter—more of a yellow color. This test is reliable for strong solutions—one percent or stronger. The flotation test should serve to differentiate the phosphate from the bicarbonate, since the sodium phosphate solutions, when tested by flotation, do not respond to a marked degree with mercurous nitrate. The darkening is but slight and takes place slowly. The urine diluted with water may show no darkening at all. No effervescence with acids

takes place in the case of the normal U.S.P. sodium phosphate in urine.

Detection of Sulphates in Urine

Sodium sulphate is used as a medicine usually in the form of crystals. Like all soluble salts, it increases the specific gravity of the urine, and also decreases acidity. A 10-percent solution is alkaline and has a specific gravity of 1.030. Sodium sulphate is used as a laxative and sold under various fancy names, so as to command a price, since it is one of the cheapest chemicals made, and must be "dolled up" in order to sell. For its detection in urine it is advisable to proceed as follows:

First use my nickel sulphate test for alkalosis and find little result; next test with mercurous nitrate and get a brownish-gray color, rather than dark; finally, test with 10-percent barium nitrate solution. Into each of two test tubes pour a *small* amount of urine, normal in the first, suspected in the second. Fill up with the 10-percent barium solution, and a plainly-perceptible, whitish precipitate is seen if sulphates are more than normal in amount, the normal urine showing only slight cloudiness due to the normal sulphates present in all urine.

Another sulphate is Epsom salt, but such small doses are usually taken that little trouble is occasioned to either the analyst or the doctor. The tests are essentially the same as those given above.

Detection of Chlorides or Bromides

Make up a solution of silver nitrate, about two-percent in strength, and add C.P. nitric acid to it until it strongly reddens blue litmus. Into each of two test tubes pour a little urine—into the one, normal; into the other, suspected—and fill them up with the silver solution. Let settle and compare the amounts of the precipitates obtained. If chlorides or bromides have been taken, the deposit in the suspected tube will be much more abundant.

More accurately, determine the amount of chlorides (or bromides as chlorides) by the volumetric process given in Mitchell's "Modern Urinology." I prefer the Luetke method. Normal chlorides seldom exceed 10 or 15 Gm. in 24 hours, and quite commonly the normal runs between 5 and 10 Gm.

Test for Alkalosis

A convenient routine test for alkalosis is my nickel sulphate test, already referred to, as follows:

Procure a Purdy percentage tube, sold by dealers in scientific apparatus, and fill it to the mark 10 cc. with urine, and to the mark 15 cc. with my 20-percent nickel sulphate solution. Place it in the centrifuge and rotate at whatever speed is commonly used (1200 to 1500 r.p.m. is sufficient), for a given time, *always the same* (three minutes is sufficient).

The amount of alkali in the urine can be roughly determined by the height of the sediment obtained. Any sediment as high as the figure 2 or higher on the tube denotes a large amount of alkali. This test is chiefly serviceable in easily determining whether the amount of alkali in the urine is increasing or decreasing. Alkalosis is a rather rare condition, but is worth detecting on account of the danger attending it.

If the physician can secure a water bath, *slow* evaporation of the urine, without boiling, may so concentrate it as to make the presence of alkalis in it obvious by testing with litmus paper. The original acid urine, turning blue litmus red, changes in reaction to alkaline urine turning red litmus blue, or blue litmus still bluer. Boiling should not be permitted, since it tends to drive off carbon dioxide, and make the urine less acid.

Detection of Salicyl Compounds (Aspirin)

Aspirin is probably found oftener in the urine than any other drug. The inventor of it should receive the thanks of the analytical profession for producing a popular medicinal substance that any ten-year-old child could detect in urine after an hour's training. Here is the simple household test: Go to any real drug store and get 10 cents worth (including container) of *Liquor ferri chloridi*, U.S.P. (solution of ferric chloride). Pour any convenient amount of the urine suspected to contain aspirin into any waterproof container and add to it almost any convenient amount of the *Liquor ferri chloridi*. If aspirin is present, the mixture immediately darkens; but, if held up to a strong light, the color is seen to be dark red, with perhaps a whitish cloud on top.

More scientifically, aspirin may be suspected in urine by my various tests. First, 20-percent ferric chloride: Fill a 4-inch test tube half full of urine and add ferric chloride solution, drop by drop. If aspirin is abundantly present, one drop is enough, but two or three drops are more striking. *An immediate darkening takes place and settles to the bottom of the tube; but, if held up to a strong light, the dark color is seen to be clear red, with a more or less copious white, cloudy precipitate (phosphates) above it.*

N. B.: Diacetic acid, in cases of diabetic acidosis, gives this same dark-red color, and patients with diabetic acidosis may take aspirin, hence the need for great care in testing the urine. The 20-percent solution of ferric chloride is advised, *not because it is needed for aspirin in particular but, for cases of diabetic acidosis, just beginning, where the standard 10 percent ferric chloride solution is not strong enough to show the red.*

Differentiation of Aspirin from Diacetic Acid

The standard methods rely on heat for this

differentiation, but I had a case where the heat was futile, and have devised a test that I am quite certain is safer than heat, if properly performed.

Flotation Test for Aspirin: Make up a one-percent solution of ferric chloride (Merck), in distilled water and use it only when freshly made—say within a week. Place 10 drops of the urine on any convenient, small, waterproof, white surface and, using a dropper, float several drops (3 to 5) of the one-percent iron solution on it. If aspirin is present in clinically appreciable amount, a purple color forms, which quickly changes to a darker red.

Students of chemistry will remember that the iron test for salicyl compounds,⁴ when positive, specifies the purple color, which can as a rule not be obtained in urine testing, unless highly dilute⁴ iron solutions are used. Diacetic acid does not give this purple color, but always a wine-red of more or less intensity—mostly less when the patient is carefully treated; always more and deeper when coma impends or is present.

Finally, cases occur when it may be difficult to say positively whether aspirin or diacetic acid is present. Stale urine should never be used for this test, since diacetic acid soon disappears from urine, but aspirin has peculiar longevity. A patient, therefore, may recover from his acidosis and take aspirin of his own accord, thus keeping the doctor guessing.

In all doubtful cases, fall back on my iodine test for acidosis, found in *CLINICAL MEDICINE AND SURGERY* for April, 1931. This test needs more attention than is paid to it, to determine its real merit. Aspirin in sufficient strength in the urine may reduce Benedict's solution used for detecting sugar, hence may cause a "positive" for sugar to be reported. In my cases, a 10-grain dose did not suffice to reduce the Benedict's solution, but a 20-grain dose reduced it abundantly, resembling a finding of about one-quarter of one percent of sugar or less. Therefore, in determining the percent of sugar by means of Benedict's quantitative method, inexperienced persons may report a fractional percent of sugar, when no sugar at all is present. This is one of the reasons why so much care must be taken to identify aspirin or other salicylate in the urine.

Phenolphthalein in Urine

When phenolphthalein is present in urine, there is a history of the use of laxatives, since this substance is added to many laxa-

tives to "reinforce" them. Originally it was thought that it was entirely excreted by the bowel, but I find it quite frequently in urine, when testing for acetone with the nitroprusside test, as follows:

To half a test-tubeful of urine, add small crystals of sodium nitroprusside, until a red deposit of them is plainly seen; then add 5 drops of glacial acetic acid and shake until the crystals are dissolved and a light-reddish solution results. Take up, with a 1 cc. pipette, stronger ammonia water, and holding the tube inclined, place the tip of the pipette just inside it and, pressing gently on the bulb, float the ammonia on the chemical mixture. A white ring of phosphates is seen with normal urine; but, if phenolphthalein is present, a fine red ring appears at the juncture of supernatant ammonia and mixture. Acetone produces a purple color.

In many cases, self-medication is unsuspected until this test is shown to be positive. It should be tried in all doubtful cases, when the motives of the patient are suspected to be mercenary, as should also the tests for aspirin. Self-medicators are likely to be detected more easily by testing for these two substances than by others thus far considered. Aspirin, in 10-grain doses, requires 24 hours for elimination; a dose of 20 grains may require 36 hours.

In closing, let me direct the attention of the medical profession to the importance of urine examinations for the diagnosis of pregnancy, and to the probability that chemical science will find a strictly chemical test for pregnancy, doing away with the use of animals. But, when such a test is discovered, the necessity for securing a drug-free specimen of urine, not contaminated with exogenous substances, becomes obvious. The sooner, therefore, the profession accustoms itself to demanding and securing drug-free urine for all urine tests, the better the interests of humanity will eventually be guarded.

For assistance in preparing this article I am greatly indebted to Doctors E. E. Madden, Alfred Lewy, Robert Lewy, J. F. Kropacek, W. T. Carlisle and Dick G. Brunjes.

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25 E. Washington St.

Notes from the International Medical Assembly

Reported by George B. Lake, M.D., Waukegan, Ill.

THE twentieth annual course of concentrated postgraduate instruction, known as the International Medical Assembly of the Interstate Postgraduate Medical Association



Masonic Temple, Detroit

of North America, was carried out last October at Detroit, Mich., with the smoothness, punctuality and success to which regular attendants of these meetings have become accustomed. Approximately 3,500 physicians, from all over the United States and Canada, as well as about 2,000 interns, medical students, nurses and technicians, availed themselves of this splendid opportunity.

The weather was ideal, and Detroit is a pleasant (if rather dirty) city, offering many attractions to visitors. The Masonic Temple, where the meetings were held, has a large and comfortable auditorium, where thousands of students were well accommodated; but the space for exhibits was broken up into several sections, which was a bit confusing for the first day or two.

As usual, practically all of the speakers were well known teachers from medical colleges all over the country (there were 72 of them this year, and none spoke twice), so that this meeting is truly a *school*, in fact as well as by implication, and the "students" attended the "classes," every day for five days, from eight o'clock in the morning until "far on into the night."

Dr. David Riesman was installed as president of the Association, and Dr. Mather Pfeifferberger, of Alton, Ill., presided adequately over the sessions, as Speaker of the Assembly, though it seemed a bit strange, to old attendants, not to see Dr. George V. I. Brown, of Milwaukee, Wis., in the chair which he has filled with such dignity for many years. Dr. William B. Peck, of Freeport, Ill., the *deus ex machina* of the Association, was ubiquitous, as usual.

The scientific exhibits at these meetings have never, of course, approached, in extent

and elaborateness, those at the meetings of the American Medical Association, but they are growing in number and variety each year, and on this occasion were decidedly impressive. The commercial exhibits are always numerous and excellent and include many fine ones which are not shown at the A. M. A. meetings.

The Commercial Exhibits

Among the new things, not previously demonstrated at important medical meetings, there were a few which I shall mention briefly, as being of the most general clinical importance.

The necessity for testing and recording the arterial blood pressure has been recognized for years, and such observations are made daily by all successful physicians. But the value of estimations of the venous blood pres-



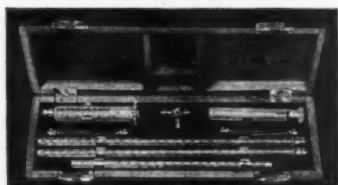
Masonic Temple Auditorium, Detroit

sure is by no means generally accepted, even today, largely because there has been no simple and practical apparatus (comparable to the sphygmomanometer) for estimating it. This need has now been met by Becton, Dickinson and Co., with their direct venous pressure apparatus, illustrated in Fig. 1, which shows the pressure of an actual column of venous blood.

These progressive manufacturers have also produced the type of stethoscope for which the medical profession has long been waiting (shown in Fig. 2). It has a Ford-type bell, for listening to the heart sounds; a diaphragm bell, for listening to the lungs; and a special small diaphragm bell with a strap for fastening it over the flexor side of the bend of the elbow, so that, in taking blood pressure readings, the physician may have both hands free and not be confused by the irregularities of the sounds resulting from variations in the pressure which are inevitable when the stethoscope is held in the hand. These bells can be changed in a moment, without removing the ear pieces from the ears, by a simple twist of the wrist.

A more elaborate apparatus is the Articulator (shown in Fig. 3), which is intended to

do, in an accurately regulated and scientific manner, everything that a chiropractor can do with his hands, and a good deal more. It is used in the treatment of fractures,



Courtesy, Becton, Dickinson & Co.

Fig. 1: Direct Venous Pressure Apparatus.

sprains, dislocations, stiff joints (including those of the spine) and all other conditions where gentle, exact and rhythmic pulling and stretching of any part of the body is indicated.

The parenteral injection of gases, especially oxygen, is being increasingly recognized as a life-saving measure of tremendous importance; but heretofore it has been available only in the larger hospitals, because of the ponderousness of the apparatus employed.

This limitation is now removed by the Thomas **Oxinjector** (see Fig. 4), which carries, in a case no larger or more cumbersome than a small suitcase, all the necessary apparatus for giving accurately measured and regulated subcutaneous or intravenous injections of oxygen or other gases, and also an ample supply of the gases required for several treatments, inclosed in special tubes so small that they can readily be slipped into the pocket.

Another development along similar lines is the "Amplon," in which E. R. Squibb and Sons are marketing the new anesthetic gas, *cyclopropane* (see *CLIN. MED. & SURG.*, Sept. 1935, p. 433). These clever gas containers are also of pocket size and can readily be attached to any of the modern anesthesia machines with which all first-class hospitals are now equipped.

Speaking of anesthesia, Merck and Co. are introducing a new inhalation anesthetic, whose chief and active ingredient is vinyl ether, under the name of **Vinethene**, which is almost as rapid in its effects as ethyl chloride and may be used over longer periods; does not depress the heart like chloroform; and is much more rapid in action and less irritating to the respiratory tract than ether. It seems to fill a definite place in the field of inhalation anesthesia.

Studies of the fish-liver oils as vitamin carriers have been going on actively for several years, and have given us Haliver oil and Tuniver oil, as more satisfactory substi-

tutes for the time-honored cod-liver oil, especially when reenforced, in some cases, with viosterol.

For a number of years, Mead Johnson and Co. have been studying the livers of the percomorph fishes (which include the cod and the red snapper) and have found that, by blending the oils from the livers of the various species, they can produce, without adding viosterol, a product 200 times as rich in both vitamins A and D as is cod-liver oil. This, diluted one-half, they offer as **Oleum Percomorphum**.

Much important work has been done on the endocrinology of the human female, but the male sex hormones have been less investigated. The Ciba Co. showed a new total testicular extract, called **Androstine**. Tablets of this product combine the water-soluble



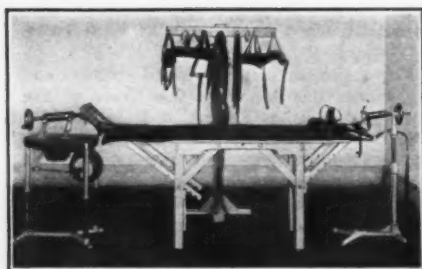
Courtesy, Becton, Dickinson & Co.

Fig. 2: Three-in-one Stethoscope.

fraction from the spermatic glands and the liposoluble fraction from the interstitial glands. For parenteral use, the two fractions are put up in separate ampules and injected alternately.

Over the years, we have palliated attacks of asthma with smokes and fumes; with parenteral injections (first morphine and atropine, then epinephrin, and later, ephedrine); and with oral medication by means of ephedrine. Now we seem to have returned to the inhalation method again, using first **Benzedrine** (which is especially helpful in nasal congestion and swelling), and now the 1:100 solution of epinephrin, marketed by Parke, Davis and Co. as **Adrenalin Chloride**, 1:100, and by the Harrower Laboratory as **Endophrin**. These products have to be very finely divided by means of an all-glass nebulizer, and then inhaled directly into the respiratory tree.

A story of all the interesting things shown at this meeting would occupy more pages than this issue of "C. M. & S." contains, so I shall stop, to present abstracts of a few



Courtesy, Pandora Bag Co.

Fig. 3: The Articulator.

of the lectures and clinics which seemed to me to be of the most practical, clinical importance.*

TYPES OF EDEMA AND THEIR TREATMENT

By Henry A. Christian, A.M., M.D., D.Sc.,
F.A.C.P., Boston, Mass.

Prof. of Physic, Harvard Univ. Medical School
In general, there are the following types of edema:

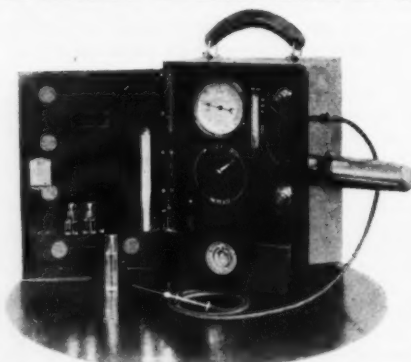
- 1.—Circulatory.
 - A. Those due to cardiac failure.
 - B. Those due to some obstruction in the portal system.
- 2.—Edemas of renal origin.
- 3.—Edemas of nutritional origin.
- 4.—Inflammatory edema.
- 5.—Anaphylactic edema.
- 6.—Edema due to peripheral obstruction.
- 7.—Edema due to some endocrine disturbance. A frequent example is myxedema due to disturbance of the thyroid.

As to the clinical aspects of edema, there may be two ways in which they may be considered: First, as an index of pathologic disturbance. A great many edemas of this type may be recognized and may be helpful in diagnosis, but require no treatment. However, those of the second group, which cause distress to the patient, do require treatment. In this group, circulatory edemas, particularly those of cardiac origin, must be considered. In the treatment, first treat the heart. This includes rest in bed, digitalis, restriction of fluid intake, and morphine. The chest should be tapped early if there is any indication of an effusion. The edema may also be reduced by the administration of diuretics, which should be given early in the morning, so that their action may be complete before the patient goes to bed. In this way he will not have to be getting up at night so fre-

*The full text of all papers and talks abstracted here, as well as of all the other three or four score dissertations with which we were all entertained and instructed, will be published, probably in February, in the volume of "Transactions" of this meeting, which will, as usual, be an inspiration to all who study it.—Ed.

quently to void. They should also be given intermittently, to avoid the development of tolerance.

The general types of diuretic drugs are the xanthines and the mercurials. The advantage of the xanthine type, which includes Theocin and Diuretin, is that these drugs work when given by mouth, but in some cases they are not so efficient as is desired. On the other hand, they have become undeservedly unpopular, on account of the fast action of the mercurials. As the xanthines require no preliminary treatment to adjust the pH of the blood to the acid side, it is well worthwhile to try them before resorting to the mercurials. A xanthine diuretic can be



Courtesy, Thomas Oxinjector Co.

Fig. 4: The Oxinjector.

given when the patient is first seen and the diagnosis made, while the mercurials are ineffective in some cases until the pH is shifted to the acid side, which may delay active treatment for two or three days.

There are three rather well known mercurial diuretics: Novasurol (which is rather toxic, but a good diuretic), Salyrgan and Mercupurin. The latter drug, Mercupurin, theoretically should be more efficient than the mercurial alone, as it is a combined salt of mercury and a purine or xanthine salt. Practically, it is no more effective than Salyrgan and works in the same way. Recently, however, the mercurial component of Mercupurin has been made available. This is effective when given as a suppository.

Drainage of abdominal cavities containing fluid should also be resorted to, to increase the patient's comfort.

PNEUMONIAS OF CHILDHOOD

By Dr. Charles H. Smith, M.D.,
New York City

Prof. of Pediatrics, Univ. and Bellevue
Hosp. Med. Coll.

Bronchopneumonia in children is very fatal, but the condition is loosely understood.

Some cases are much like lobar pneumonia in adults; in fact, lobar pneumonia is rather common in young infants. An irregular temperature, in a child, does not rule out lobar pneumonia. If the consolidation does not reach the hilus, the physical signs are not clear.

Out of the steadily lengthening list of types of pneumococci, there are seven in which specific antiserums are of some use. Of the 30 types which are found in infants, types of 14 and 16 are important. In older children, type 1 predominates.

In aspiration pneumonia, from the inhalation of food, vomitus, etc., the lesion is lobular, but the affected lobules may be confluent, so that the signs resemble those of the lobar variety. In lobar and lobular pneumonia, the bronchial tubes are not involved in the inflammatory process.

There may be signs of consolidation, with a negative roentgenogram. If pericarditis is present, move the x-ray tube eighteen inches to the left and take another picture, with the plate at the back.

We may find several types of pneumonia in the same child, but the death rate for all of them is high (32 percent) in the first year, when we see most of the broncho-lobular cases. In the second year it is 16 percent; and in the third year 14 percent. Most children over five years of age recover from lobar pneumonia.

In these cases we must treat the patient, not the disease. Most of these little patients are overtreated, and the essentials omitted. These essentials are:

Air, which should be fresh, but *not cold*.

Bedding, which should be *light* (a sheet and one blanket, if the child has a high fever).

Bowels, which should be kept open with a laxative every night (milk of magnesia or aromatic cascara). If this does not act, give an enema in the morning (never at night).

Diet, which should be light and easy to digest—not much milk, but plenty of fruit juices and ices. These patients do not need many calories, because the disease is of short duration.

Rest. Do not disturb the patient more than necessary. Take the temperature, give treatment and feedings and whatever is required *every three hours*, and between these times, *let the patient sleep*, giving water or fruit juices only as needed.

Reduce fever with aspirin, $\frac{1}{2}$ to 1 grain, as required, in younger children; 1 to $1\frac{1}{2}$ grains in older ones; or one may use a cold pack from the armpits to the knees.

Oxygen should be given if cyanosis develops, and *transfusion* if it is indicated.

Drugs, not so much, but caffeine, ipecac and codeine may help, if used judiciously.

PROSTATIC OBSTRUCTION

By William E. Lower, M.D., F.A.C.S.,
Cleveland, O.
Cleveland Clinic

The condition of the prostate depends upon the endocrines, especially the gonads and the pituitary. In castrated animals the anterior pituitary hypertrophies. As age advances, the tubular structure of the testes atrophies, but not the interstitial structures. At this time the prostate enlarges.

In 76 patients suffering with prostatism, who were given *Inhibin* (a product of the tubular structure of the testes), the prostate has regressed and all symptoms have been relieved in about 63 percent of the cases. We do not yet know the details of this process, nor have the optimum doses and other details been fully determined so far, but the prospects are very interesting.

On this basis it also seems logical that some way should be found to relieve women of uterine fibroids and some types of mastitis without operation.

For some time to come, surgical measures, of one sort or another, will probably be necessary in some cases of these kinds, but there seems to be hope that within a few years, we shall be able to handle them by well-considered endocrine medication.

BRONCHOSCOPY IN BRONCHIAL ASTHMA

By Louis H. Clerf, M.D., F.A.C.P.,
Philadelphia, Pa.
Prof. of Bronchoscopy and Esophagoscopy,
Jefferson Med. Coll.

Many cases present symptoms of bronchial asthma which actually are not that disease. The bronchoscope can often be an aid in diagnosis and, for instance, prevent mistaking a foreign body in the respiratory passages for an allergic condition. As a matter of fact, physicians have been known to make elaborate skin tests for allergic sensitization, in patients who were wheezing, without examining the chest at all.

An asthmatoïd wheeze may be due to constriction of the trachea or bronchi; to a foreign body in the esophagus; to a benign or malignant tumor of the trachea or bronchi; etc. If the wheezing respiration stops, it may be because a bronchus is wholly occluded. In every child who is labeled "asthmatic," the presence of a foreign body should be carefully excluded.

Tracheo-bronchial disease frequently follows sinus infections, and clears up when the sinuses become clear. It is obvious that tests for and treatment of supposed allergic conditions will be useless in such cases.

Atelectasis, both lobar and lobular, may be due to stopping of the bronchial tubes by plugs of thick, tenacious secretions. Bron-

chectasis may also coexist. The bronchoscope, in trained hands, is the ideal instrument for diagnosing and treating such conditions and for collecting secretions from the deeper parts, for the preparation of autogenous vaccines.

DIFFERENTIAL DIAGNOSIS OF THE MAJOR PSYCHOSES

By Clarence B. Farrar, M.D., Toronto, Can.
Prof. of Psychiatry, Univ. of Toronto

In the hierarchy of the psychoses, we may have major, minor and minimal conditions, shading off into normality, the same as we find in physical disease. As a matter of fact, there is no clear and sharp line between mental health and a psychosis. We may find very severe conditions among the "minor" psychic abnormalities (neuroses), and mild ones among the "major" conditions (psychoses). In general, there is "less risk" in the minor psychic disturbances; but suicide may occur in all types of depressions, all down the line.

We will not try to separate the major and minor conditions, for discussion; and we will leave out the organic and constitutional cases. In talking about them, it is safer to use adjectives than nouns—we do not show ourselves up so readily. Let us not give concrete names to the maladies, but speak of neurotic, affective, schizoid or paranoid conditions.

Above all, we must not try to fit a patient to a diagnosis, but make every effort to discover what signs and symptoms are favorable or unfavorable. For this, the more complete the rapport between the patient and the physician, the better the prognosis; but inaccessible patients may recover.

It is important to ascertain the patient's insight—how does he feel and think about himself and his affairs. If his affect, or emotional tone, is out of line with reality or conduct, it is a bad sign.

Cases of long, slow development are less favorable than those that are more acute, if they are an outgrowth of kinks in the general personality.

Psychoses in the shut-in types of patient are less favorable than those in the overt or extrovert type. We must study the patient's innate mentality or general plan of thinking, for only on this basis can we map out an intelligent system of therapeutics.

COMPLICATIONS OF LATE PREGNANCY

By John R. Fraser, M.D., C.M., F.A.C.S.,
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Prof. of Obstetrics and Gynecology
McGill Univ.

The average woman requires a comprehensive general and obstetric examination, omitting nothing. The dimensions of the pelvis

must be measured accurately in all cases. The athletic girl, with narrow hips, may have a male type of pelvis.

Women who have been in bed much or have had much dysmenorrhea, and multiparas with a bad obstetric history, require careful watching.

There is now a tendency to place too much dependence upon x-ray examinations and neglect the use of the hands and the judgment in making diagnoses and examinations. It is better, in most cases, to examine mother and fetus together. We must know the capacity of the pelvis, by bimanual palpation and pelvimetry and by fitting the fetal head into the maternal pelvis. The fingers, feeling and examining the soft parts, can give necessary information which will be missed by the x-rays.

In borderline cases, it is well to let the woman go into labor, in a hospital, and see what the natural forces can do. But we should make clear-cut diagnoses of impossible cases early, so that cesarean section will be an elective operation, planned for long in advance.

ABDOMINAL PAIN

By Frederick J. Kaiteyer, M.D.,
Philadelphia, Pa.

Clin. Prof. of Medicine, Jefferson Med. Coll.

Active inflammation of the peritoneum lowers the threshold of pain and causes symptoms out of proportion to the severity of other lesions.

Intense and sudden abdominal pain, beginning in the epigastrium and rapidly becoming generalized, is characteristic of perforated gastric or duodenal ulcer. Traction on the mesentery, as in strangulated hernia, causes sharp pain.

Referred pain occurs only when sensitive nerves are irritated by lesions of insensitive organs. Referred pain in the shoulder is seen in lesions in those regions of the diaphragm which are supplied by the phrenic nerve. It is characteristic in perforative peritonitis. True visceral organs are not sensitive unless they contract violently or irritate the peripheral peritoneum.

Bedside observations and a knowledge of anatomy are necessary for an accurate diagnosis of pain.

HYPERINSULINISM

By Drs. E. Starr Judd and E. H. Rynearson,
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Prof. of Surgery and Instructor in
Medicine, respectively,

Univ. of Minn., Grad. Sch. of Med.

In hyperinsulinism, the patient shows distinct symptoms, coming on with hunger and relieved by eating. These are weakness

(sometimes amounting to prostration), confusion, convulsions and stupor.

The causes of this conditions are: (1) Excess of insulin in the blood; (2) lack of the opposing endocrine factors, from the suprarenals or pituitary; (3) lack of glycogen, as during lactation or after prolonged effort; and (4) disturbances of the body's regulating mechanism. It frequently follows diabetes of more or less long duration. Spontaneous hyperinsulinism sometimes appears in the infants of diabetic mothers. Tests have shown that the sugar in the mother's blood, at the time of labor, may be 140 mg. per 100 cc.; that in the umbilical cord, 80 mg.; and that in the baby's blood, only 40 mg.

Physicians should diagnose this condition more closely and accurately. There are patients who must get up in the middle of the night to take nourishment, or have convulsions.

In cyanotic babies with low blood sugar (or, possibly, in all cases of cyanosis), inject dextrose solution intravenously; then pass a tube into the stomach through the nose, and feed dextrose frequently. In mild cases, in adults, give extra feedings between meals; in severe cases, operate.

The surgical treatment consists of the removal of localized islet tumors of the pancreas; and in suitable cases the cure is rapid and dramatic. Patients with a preoperative blood-sugar level of 40 mg. per 100 cc. of blood (if it went as low as 30 cc. they would be in convulsions or stupor), will show 140 mg. soon after operation.

These islet tumors, if clearly localized, do not recur after removal; but if multiple metastases have occurred, it is useless to operate. It is best not to do a pancreatic resection, if there is no localized tumor.

HYPERTENSION

By George Crile, M.A., M.D., LL.D., F.R.C.S., D.S.M., F.A.C.S., Cleveland, O.

Surgeon, Cleveland Clinic Hospital

In malignant hypertension there is a mechanism like a motor, involving the brain, the sympathetic system and the thyroid-adrenal system. In this mechanism, the pathology is *physiology*—something in the nerves themselves to cause the outbursts of energy—some "fulminating substance."

Slow, dull animals have a small sympathetic complex, and vice versa. The alligator has merely a ganglion chain to represent it. It does not suffer with hyperthyroidism, hypertension or diabetes. It merely lives to grow old.

The tiger has a large and extensive sympathetic complex and large adrenals. It cannot live long, because it is too high-powered. One can tell how "wild" an animal is by the size of its sympathetic complex and adrenals.

Disturbances of this group of organs constitute the "energy disease." When they are stimulated, the arterial tension rises. Any factor which will increase the output of adrenalin will make the blood pressure go up.

The brain does not initiate work. It gives an impulse, and the adrenal-sympathetic system responds with hypertension, hyperthyroidism, or some other stress-produced condition. About half of the cases of malignant hypertension show an increased basal metabolism, and some have *Raynaud's disease*, which is due to long-sustained and merciless contraction of the peripheral blood vessels. In fact, malignant hypertension is "Raynaud's disease of the great vessels."

The pathologist finds nothing in these cases, because they are due to perverted *physiology*, rather than to perverted anatomy.

Cutting the sympathetic supply to the adrenals relieves all these conditions. If we denervate the right side, the pressure comes down promptly; but it rises again after from four to six weeks, because the other adrenal gland hypertrophies. Therefore unilateral denervation or adrenalectomy is useless.

If a hypertensive patient also shows hyperthyroidism, it is foolish to do a thyroidectomy alone. If an electric light is burning too brightly it will soon burn out. In such a case, would it be wiser to slow down the dynamo or to operate on the light bulb?

In all operations on the sympathetic system, it is necessary to use local anesthesia, in order to block the nerve impulses.

Adrenal denervation is useless in cases of arteriosclerosis or any other condition where anatomic changes have taken place. Its place is in pathologic conditions due solely to perverted physiologic processes, such as so-called essential hypertension.

This therapeutic measure has been in use for only 3½ years, so we do not yet know how permanent the relief will be. If we break up the sympathetic nerves around the adrenals, we do know that the patient's condition is immediately improved and remains so as long as we have observed these cases. The method is worthy of close observation and study, remembering that the disease is in the sympathetic complex, not in any one gland.

Progress in Immunology

Tetanus Toxoid

By D. H. Bergey, M.D., B.S., A.M., D.P.H. and S. Etris, Philadelphia, Pa.

RAMON and Zoeller¹ demonstrated that tetanus toxin can be rendered nontoxic by treatment with formaldehyde, thereby changing the toxin into the toxoid. They found that the toxoid retained its antigenic properties. Three doses, of 1.0, 1.5 and 2.0 cc. of the toxoid, injected subcutaneously into human beings, at intervals of two weeks, caused the development of from 0.003 to 0.5 unit of tetanus antitoxin per cc. of serum in different persons, when tested several months later.

Bergey and Etris² and Bergey³ showed that alum-precipitated tetanus toxoid has a much higher immunizing value, in guinea pigs, than has the same toxoid without alum. When the precipitated toxoid was washed several times with sterile saline solution, it no longer caused either local or general reactions on injection into human beings. This refined tetanus toxoid was used in the active immunization of persons against tetanus infection.

Before injecting the first dose of toxoid, each person was bled and the blood serum was tested for the presence of tetanus antitoxin. These tests were carried out by Knerr and Hottle,⁴ who devised a method of detecting minute amounts of antitoxin. The findings were reported as 0.0001 (+ or -) unit, except in five persons, where the findings were 0.0005 unit. The question then arose whether the five persons in question had acquired some active immunity. When the responses of these persons to the first and second dose of toxoid were compared with the responses of the other members of the group, it was found that the five persons responded to the toxoid in the same manner as the other members of the group, as to the rate and quantity of antitoxin produced.

It seems evident that 0.0001 unit of antitoxin in the normal serums represents the limit of sensitivity of the test. For this reason we believe that normal persons have no natural immunity to tetanus. Ramon and Zoeller¹ have reported that they found no tetanus antitoxin in the serum of any non-vaccinated person. Lincoln and Greenwald⁵ likewise found no antitoxin in the blood of 18 normal persons.

A single dose of 1 cc. of the refined tetanus toxoid, injected into a group of 32 persons, caused the development of 0.001 to 0.04 unit of antitoxin 90 days later. It was believed that this amount of antitoxin in the blood was too small to afford protection by the injection of a second dose of toxoid, if a person met with an injury. In consequence, it was decided to give each person a second dose of

toxoid to raise the antitoxic immunity. One month after injecting a second dose, the amount of antitoxin found ranged from 0.1 to 9.0 units per cc. of serum. A year after receiving the second dose of toxoid the amount of antitoxin found ranged from 0.01 to 2.0 units per cc. of serum. This amount of antitoxin, one year after the second dose of toxoid, is believed to be sufficient to protect against infection on injury, provided a third dose of toxoid is given. This third dose of toxoid will raise the antitoxin content of the serum to the protective level in time to prevent infection through tetanus bacilli that may have gained entrance to the wound.

It was found, by experiments on guinea pigs, that the time interval between the two doses of toxoid is an important factor in the stimulation of antitoxin formation. An interval of 90 days between the first and second dose of toxoid gives rise to definitely greater amounts of antitoxin in the blood than will two doses given at an interval of only 30 days. The same effects were noted in the immunization of human beings, in that, at the 90-day interval, the amount of antitoxin formed was greater than when the two doses were spaced closer together.

In order to maintain the active immunity in persons who had a primary stimulus by two doses of toxoid and have had no injury, it is proposed to give a third dose of 1 cc. of toxoid two years after the second dose. This third dose of toxoid should maintain the antitoxic content of the serum for a further period of two or more years. It will be necessary to study the immunity response and the duration of the immunity in groups of persons, over a longer period of time, in order to determine the duration of the protection afforded by three doses of toxoid.

The active immunization of human beings with the refined tetanus toxoid was started in August, 1933. Up to the present time, only one member of the group has had a severe injury. This person was knocked down by a coal truck while crossing a street and was taken to a hospital for the treatment of extensive lacerations and contusions. The hospital was supplied with a dose of tetanus toxoid, which was given. However, the surgeons, on their own initiative, also administered a prophylactic dose of tetanus antitoxin. This person recovered without untoward effects. Some of the other members of the group suffered minor injuries, but none of them received additional toxoid or tetanus antitoxin. None of these persons developed tetanus infection in their wounds.

Indications for the Use of Tetanus Toxoid

While passive immunization by the injection of 1,500 units of antitoxin is generally successful in preventing the disease, the fact remains that, when prophylactic doses of tetanus antitoxin are necessary because of frequent injuries, such persons may become sensitized to the serum proteins of the horse and develop undesirable or even harmful reactions. For these reasons it is advisable to advocate the active immunization with tetanus toxoid of all persons engaged in pursuits where injury occurs frequently.

Persons who are already sensitive to the proteins of horse serum may suffer disturbing reactions from prophylactic injections of tetanus antitoxin. Such persons should be actively immunized against tetanus by receiving two doses of the toxoid at an interval of about 90 days. If injury should occur a

month subsequent to the active immunization, a third dose of toxoid will quickly raise the immunity to a higher level, and a prophylactic dose of tetanus antitoxin need not be given. After the third dose of toxoid has been given, the immunity remains above the protecting level for a year or longer before another dose of toxoid will be required.

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Progress in Preventive Medicine

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WHILE the yearly progress in practically all lines of human endeavor is usually slight, it is nevertheless quite constant, some years naturally showing more advance than others. In matters of preventive medicine, the progress is unusually slow, as it is an impersonal matter with the community at large, and unless something arises that affects them or their families directly, there is comparatively little interest in health matters by the individuals of a community. When such an interest adds to the taxes, it is likely not to create any enthusiasm, but may develop direct opposition; and during the depression we have been going through, the Health Department has been one of the first to suffer from diminished revenues. If we can make progress in the face of such conditions, we may well be proud of the workers in the field of preventive medicine.

There have been no really startling advances during the past year, but a number of interesting health problems have been consistently worked upon and a steady advance has been made. An annual review of the events in our particular field is much like the yearly stock inventory of the merchant, and helps us more clearly to visualize where we stand. In matters of preventive medicine it is not always possible to keep up to the minute, since it takes much time to assemble facts and correlate them. So we are usually about a year behind in really important matters, except when occasionally a startling dis-

covery is made. Some of the data here presented are, therefore, mostly of the year 1934, but are none the less interesting and instructive.

Air Conditioning

Air conditioning of office buildings, hospitals and some private homes is going on steadily. For persons showing various forms of sensitization to pollens, such protection for hay fever sufferers is of undoubted benefit. It is too early to say as to ultimate results, but it is within the realm of possibility that the reduction of the amount of irritation may be enough so that border-line cases, at least, could go through the pollen season comfortably by this method of air filtration. By remaining within the protected zone most of the time, there seem to be good prospects of considerable relief to such sufferers. When added to the protection given by preventive inoculations, we may hope for distinct progress in making life more bearable for these unfortunates.

It would appear that living in a regulated atmosphere should improve the general health.

Amebiasis

With all the publicity about amebic dysentery, there is still a large part of the population (and altogether too many of the medical profession) who regard dysentery as a purely tropical disease. True, it is still spoken of as "tropical" dysentery, and without doubt it exists in all parts of the tropics, but it has

also been shown to be of universal distribution and so serious in its effects that it is now a major health problem.

The Chicago epidemic of 1933 centered attention on the water supply of public buildings, especially such public places as hotels, as the probable source of such infections. A check of many other cities has shown that their plumbing was likewise defective. This has resulted in a great movement to replace the defective plumbing, and will doubtless result in much needed improvement. But it is unfortunate that, with this centering of the attention on the water supply, many sanitarians seem to have lost sight of the greater danger of the "carrier" who is a food handler. While an occasional epidemic may be produced by infected water, this is relatively rare. But the infection of individuals goes on constantly through infected food handlers, and in ordinary times they are the principal sources of the spread of this disease. This is particularly true of the cheaper eating places, where cleanliness is not emphasized and satisfactory lavatory and toilet facilities do not exist.

A number of observers have announced that washing the hands with soap practically removes the danger of conveying the ameba cysts, and that drying rapidly destroys them. In a recent article (*Am. J. P. H.*, Nov., 1935, p. 1231), Col. Charles Craig, Medical Corps, U. S. Army (Ret.) has shown the fallacy of these conclusions. While the amebae may live only ten minutes upon the hands after drying, there is ample time to pass live cysts onto food in that interval. The amebae will survive for much longer periods under the finger nails, unless they are unusually clean. He concludes that, while the urban problem may occasionally be that of water-borne infection, the rural, and in general the urban infections, are passed on by carriers, often through raw vegetables, such as salads, where there is much handling of the food, in its preparation, by possibly infected cooks and kitchen attendants. The problem is still largely one of eliminating carriers of ameba cysts from among food handlers. Health officers should not relax in their efforts to eliminate this menace. It is an expensive and laborious process, but up to date appears to be the only way to handle this menacing problem to public health efficiently.

Anthrax

A recent report, covering figures up to the end of 1933, indicates that anthrax is definitely on the increase ("J. P. H. Assn. Yearbook," 1934-35, p. 73 *et seq.*). The disease is found in both urban and rural life. In the cities it is usually among those who handle hides and wool. In the country the infection appears to be communicated directly from

animals. A few cases have been reported of anthrax contracted from shaving or tooth brushes made from unsterilized hair.

Apparently the law does not provide sufficiently for the disinfection of hides in the United States. Foreign countries pay much more attention to the dangers of anthrax infections than we do. Some efforts have been made here to disinfect hides by hydrogen sulphide and by pickling. Disinfection of tannery effluents with chlorine is strongly recommended. Wool should be thoroughly disinfected, as wool or wool clothing may be the source of this infection.

Atmospheric Pollution

It is constantly irritating, to those who are trying to promote public health, to note the indifference of the great mass of people to atmospheric pollution. Only occasionally can anyone stir up any interest in the matter, even when chimneys right in front of them are pouring clouds of black smoke into the air and cutting down the already weakened sunlight. Much progress has been made by heating engineers, and where the profit motive is strong enough, smoke consumers are installed and are more than self-supporting. But the small users of coal fail to respond to any pressure yet exerted, and continue to pollute the air with the products of combustion. Wherever concerted action by a populace has demanded reduction of this pollution, it is comparatively easy to get results.

Brucelliasis

The very widespread incidence of undulant fever is now generally recognized. Formerly it was thought that only one of the three varieties of the *Brucella* organism was pathogenic to man, but it has now been definitely determined that all three are pathogenic, and all have been isolated from cow's milk ("Am. P. H. Yearbook," 1934-1935, p. 130). So far it has not been possible to differentiate the three forms clinically. The infection in man may take place by way of the skin, from handling infected animals or their excretions, or by way of the mucosa, from infected dairy products.

The list of animals that have been found to carry this infection includes the cow, goat, sheep, hog, fowls, wild deer and buffalo, horse and dog.

In a discussion of this subject at the recent convention of the Public Health Association, at Milwaukee, Carpenter, of Rochester, N. Y., stated that, so far, the treatment of this condition was mostly symptomatic, and that the average duration of the illness was about twelve weeks. So far no vaccine has proved of value.

Bubonic Plague

To many, even among physicians, bubonic

plague is a disease of the middle ages, or possibly occasionally occurring in some far-off country. But it is a shock to be told that a pandemic of plague was present in 1900, and that today a recent writer, after describing an extensive outbreak of plague among the rodents of California, concludes, "The prevalence of infected squirrels near the borders of Oregon and Nevada and on the other side of the mountain range, suggests that there is no natural limitation to the spread of plague through wild rodents to places far distant from its original entry into this country in the Bay District of California. Plague is very evidently a permanent problem on the Pacific coast and the prospect of its becoming a problem in other states appears at the present time to be good. Especially to be feared, so far as man is concerned, is the pneumonic form of the disease which, as I have already indicated, may be directly related to plague in animals of the squirrel and ground-hog type" (Rodent Plague in California. W. H. Kellog, M.D., in *J. A. M. A.* Sept. 14, 1935, p. 856).

Much can be done to prevent such developments by keeping the rat and ground squirrel population to the lowest limits. All of us, but particularly the rural population, are largely indifferent to the number of rats in a community, so long as they do not disturb us personally. But rats, and rodents generally, have played, and will continue to play, an important part in health problems. They are always a potential danger.

Diphtheria and Pertussis

Steady progress is being made in protecting the population, especially the children, from communicable diseases by immunizations of various types. There has been a tendency to promise ourselves too much from this work, and a rather serious jolt came to many who heard Bundesen's report on the diphtheria immunization work in Chicago. About 85 percent of the children of Chicago have been immunized against diphtheria. About 237,000 of these, over six years of age, were Schick tested and 35 percent reacted positively. He believes that about 25 percent of the inoculated children are still susceptible to diphtheria. He is of the opinion that additional protection, through additional toxoid, may make them Schick negative, but that there appears to be a definite percentage in which the protection does not develop. Active work is being carried on to determine this point.

It would seem highly desirable to check up on other extensive immunizations, to determine how well founded our confidence in them may be.

Pertussis vaccine gives fair protection. About 10 percent of children who have received 8 cc. of commercial vaccine and are subsequently exposed to whooping cough,

take the disease (*J. P. H.*, Nov., 1935. Known and Unknown *Bacillus Pertussis Vaccine*. Louis Sauer, M.D., p. 1226).

Protection in 90 percent of children would appear to make the trial at prevention well worth while.

Malaria

Malaria continues to be one of the major health problems of a greater part of the world. Only in northern countries does it fail to take its yearly toll of disabilities and death. Anti-mosquito campaigns are expensive, and often there is a lack of both money and enthusiasm to carry them on. Quinine is still one of the standard weapons for fighting this scourge, but very favorable reports are coming in following the use of newer drugs.

Atabrine or *Chinacrin* is apparently much more rapid in action than quinine and lacks some of its disagreeable features. So far it seems to be safe in kidney involvement, as it has been used in blackwater fever; also to be free from oxytocic action. It apparently destroys the asexual forms of all malarial parasites, and the sexual forms of tertian and quartan parasites.

Another drug called *Plasmochin* or *Aminoquin* appears to prevent the development of all sexual forms, hence is valuable in preventive medicine. Experimental work on rubber and fruit plantations has given excellent results, with reduction of malarial morbidity by as much as 80 percent. This form of prophylactic treatment would apparently be of great value when men must be exposed to malarial infections, or before anti-mosquito work becomes effective.

Anti-mosquito work is of greater importance now than ever before, as with the rapid increase of air travel, it is perfectly possible for infected people or mosquitoes to be brought to our shores from almost any part of the world. Yellow fever still exists in Africa, and could easily be reintroduced into the Americas from that country.

In urban populations at least, most of the mosquitoes that make life miserable in the summer time, are bred on or near the premises. Water standing in eavestroughs, in tin cans hidden in long grass, in small puddles, or even in water-filled cow tracks or any standing water, will breed countless numbers of these pestiferous insects. Community campaigns can largely clear up such pests, when the will to do so is present.

Mental Hygiene

We have so much stressed physical hygiene of late years that there has been a general oversight of the need for mental hygiene to balance this teaching. This need must be met through general education, and more and more this is being included in the train-

ing courses of doctors, nurses and other health workers. It should be regarded as part of public health work, wherever this instruction is given.

Milk

One notable achievement for better milk has been announced during the past year by the acceptance of pasteurization of certified milk. It has been noted many times that, while the extra precautions required for certification of milk greatly reduce the number of bacteria therein, and lessen the possibilities that milk will carry infections, it does not guarantee that the milk will not contain pathogenic germs. Hence the decision of the American Association of Medical Milk Commissions, at their meeting in June, 1935, to approve permissive pasteurization, is a fine forward step toward a safe milk supply and the adoption of the opinion now generally held by health officers that "no milk is safe for human food until it has been heat-treated" (*J. P. H.*, Aug., 1935, p. 959).

In 1934 there were 40 epidemics reported from the use of raw milk, totaling 1,324 cases, with 44 deaths. Typhoid fever ranked first in the number of epidemics, but septic sore throat was far in the lead in the number of cases (*J. P. H.*, Sept., 1935, p. 1062).

Poliomyelitis

As usual, there have been some outbreaks of poliomyelitis during the past year. An epidemic started in North Carolina in April, passed into Virginia, then appeared in several western cities and in New York. The mortality, so far, has been about 7 percent, and 85 percent of those attacked were under 10 years of age. Small outbreaks have occurred in Massachusetts, Rhode Island, Kentucky, Michigan and California. It was thought to be serious enough to interrupt a planned convention of Boy Scouts at Washington, D. C.

There has been a good deal of difference of opinion as to the efficacy of treatment with Brodie's and Kolmer's vaccines. As the latter consists of attenuated cultures, it was unqualifiedly condemned by the Public Health Service at the Public Health meeting in Milwaukee. A number of cases were quoted in which the vaccine was the cause of the disease (James P. Leaks, M.D., U.S.P.H.S., in a paper read at this meeting).

Brodie's vaccine appears to be perfectly safe and the immunity conferred compares favorably with that conferred by an attack of the disease (*J. P. H.*, Jan., 1935, p. 54. Active Immunization against Poliomyelitis. Maurice Brodie, M.D.).

Psittacosis

Psittacosis came into prominence, during the pandemic of 1929 and 1930, as being intimately associated with exposure to parrots. Since that time a number of epidemics and

individual cases have been reported. Later studies indicate that, not only imported parrots and parakeets, but those locally produced, as well as many other birds popular as pets, are subject to psittacosis. Among these are parrotlets, cockatiels, Java sparrows, canaries, Pekin robins and young chickens. As the mortality of this disease, so far, has been over 21 percent, it is a new and serious problem. The public generally has, so far, failed to appreciate the danger of contact with birds. In California this problem is a real one, but it is not limited to any locality. All birds to be introduced into households as pets should have been under observation for weeks, preferably for five months. Efforts are being made by bird breeders, working with Public Health Officers, to eliminate psittacosis (Recent Studies on Psittacosis. Meyers, Eddie and Stephens. *J. P. H.*, May, 1935, p. 571).

Rabies

As practically all domestic animals are subject to rabies, and particularly as the dog, an animal highly susceptible to this infection, is a member of nearly every household in the land, the subject of rabies is one of ever present interest to every practitioner of medicine. It is not limited by season or location. Dog bites are of daily occurrence, and laboratory methods can now readily determine whether the animal inflicting the bite is rabid. It seems fitting to repeat the suggestion, so often given in the past, not to destroy the suspected animal until it is determined whether or not it was rabid at the time of inflicting the wound. If it is killed, the head should be secured if possible, packed in ice and shipped to the nearest laboratory for determination of this point. Since the period of incubation of rabies is slow, there is ample time for this procedure. If the animal was not infected, there is no need to give the expensive and disagreeable Pasteur treatment. But if the animal was rabid, we have almost perfect protection by this treatment, as modified by later workers. The reports include 1932 and indicate that there has been a steady fall in mortality. Every case of known or undetermined potential rabies following the bites of animals, especially dogs, should be given this life-saving treatment.

All dog owners should consider the advisability of having their dogs annually protected by anti-rabic vaccine. This will prevent the disease in a large number of cases (*J. P. H.*, editorial, July, 1935, p. 857).

Radio Health Talks

The general spread of reliable health information by radio, from recognized sources of authority, has been progressively increasing. There is little doubt as to the value of this method of disseminating important health

facts, and in my opinion, it should receive the hearty support of the medical profession.

Rocky Mountain Spotted Fever

This disease, formerly confined mostly to the mountain regions of Montana, or at least recognized there mostly, has been reported from many of the western states and has now appeared in New York state (J. P. H., Sept., 1935. Rocky Mt. Spotted Fever in New York State Outside of N. Y. City. Maillard and Hazen., p. 1015).

Since this disease is spread largely by a tick (*Dermacentor andersoni*) and many small animals harbor this tick, it being especially fond of rabbits, it is not difficult to see how this infection may be spread. The infection does not perish with the death of an infected tick, but passes on to succeeding generations through the eggs, apparently for an unlimited number of times. Another tick, limited largely to rabbits, has been found to transmit this disease to these animals. As an adult tick may live without food for as much as two years, and freezing only makes them dormant, it is perfectly possible to have ticks transferred with market shipments of frozen rabbits. Cases of spotted fever have been reported from all of the mountain states, from Washington, Oregon, California and, more recently, from South Dakota, Kansas and Nebraska. While this disease has more difficulty in spreading than does tularemia, there is little doubt that it may eventually reach any part of the country where ticks are found.

Swimming Pools

Swimming has now become a major sport and is with us the year round. But with all the improvements that have been made in the care of swimming pools, they are still one of the most important public health problems of the day. It is a very expensive and exacting job to keep the sanitation of a popular swimming pool up to anything like the requirements for safety of the swimmers, and where commercial considerations come into the problem, many pools will be found far below even the minimum of safety requirements. Hence there is a continuous procession of middle-ear and sinus infections coming out of swimming pools, with a fair prospect of eye and skin diseases spreading in the same manner.

Another feature that adds to the problem is the present vogue of underwater swimming, such as the "crawl stroke" and fancy diving. These methods tend to force water into the sinuses, and are undoubtedly the causes of much of the middle-ear infection and deafness that is so common among those who frequent swimming pools. I believe the profession can do much to prevent these unnecessary head infections and loss of hearing, by calling the attention of parents to this

danger, and urging that the young people swim with the head above water. The constant irritation of the respiratory mucous membrane by water, often loaded with infections of all sorts, together with the chilling of the body by too-long exposure to low temperatures, is responsible for much of the great increase in head infections, and can be mostly avoided, even by those who frequent swimming pools, if the head is kept out of the water. Sanitary authorities should be upheld in their efforts to make swimming as safe a sport as possible. But while the improvements in the tanks will help, it will still be necessary to urge the abandonment of underwater swimming if we are to make much progress in reducing such infections.

A New Smallpox Vaccine

Some very interesting work has been done at the Rockefeller Institute of New York, mostly by Rivers, in developing a new method of protection against smallpox. The vaccine is grown on chick embryos, and is injected intracutaneously. It produces very little reaction, and usually leaves no scar. While the work is still in the experimental stage, it does have great promise. It has been found to protect against cowpox, since those vaccinated with the new product will not react to the ordinary calf lymph. Up to date it is not definitely known how great is its protection against smallpox, but there is reason to believe that it will protect as fully as calf lymph. It is produced in a sterile form and can readily be kept that way. Apparently it can be produced at a much less cost than the present material. Further developments promise to be most interesting.

Ticks

With increasing knowledge of the diseases that can be spread by ticks, or "wood ticks," there is a possibility of widespread infections following the vacation season excursions into the open, if information relative to these dangers is not widely spread. Apparently sportsmen's papers are unwilling to call attention to such possibilities, for fear of damaging the sports and lessening of sales of their advertisers. Wood ticks are widespread wherever there is shrubbery or woods, and many varieties may convey disease. Moreover, once a tick is infected, it can pass on the infection to its progeny through the eggs, *ad infinitum* apparently. Rocky Mountain spotted fever, tularemia and relapsing fever are the more common diseases that may spread by ticks, and the first two have wide distribution, especially tularemia.

Much can be accomplished if doctors will, as far as possible, bring this danger to the attention of their sports-loving clientele, so

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PHYSICAL THERAPY AND RADIOLOGY

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Progress in Radiology

It rarely happens that any year's contribution to our knowledge is revolutionary or epochal; however, many varied contributions are of great interest. These are expressions of pre-existing conditions, expressed as variants or as modifications and conditions that are frequently encountered. Because of vagaries or heterotopic forms, it is desirable that a continued interest be sustained and consequently the literature concerning radiology is sensibly expanded.

Refreshing original work by Makoto Saito (Nagoya, Japan), on the normal shadow of peripheral nerves and their pathologic changes in injury and tumor, is unique and no doubt will be amplified.

By means of injecting thorium dioxide solution (called Thorotrast) into the ulnar nerve, he has been able to roentgenograph the nerve for a maximum length of 37 cm. The picture taken by this method revealed, not only the shadows of the nerve fibers, but also the external and internal sheaths of the nerve. If it is applied to an injury of the nerve, the opaque substance injected into the periphery will not infiltrate into the center over the scar on the nerve caused by the wound. If it is applied to the diagnosis of neuroma, it will not only show the form of the neuroma itself, but will also reveal its structure, together with the stem of the nerve penetrating into the neuroma. As a locality for the injection, he selected the *sulcus nervi ulnaris* of the humeral bone. The nerve is located at this point by the left index finger, is punctured percutaneously with a thin needle which fixes the nerve, and from 0.5 to 1.0 cc. of thorium oxide solution is slowly injected into it.

Other works of interest are contributions on roentgen-ray diagnosis of inflammatory foci in bone tissue, by means of small doses of Thorotrast; various congenital conditions of the skeletal system; multiple spontaneous idiopathic symmetrical fractures; localization of foreign bodies in the eye by aid of contrast substances introduced into Tenon's space; bone-free radiography of the eye; advances in breast radiography; use of expiratory roentgenograms to reveal pneumothoraces; serial bronchography; and kymographic studies of cardiac, respiratory, gastric and renal conditions.

Polisography of the stomach is a method developed by Tamiya and Nosaki in which a celloidin solution is injected into the gastric wall. Changes caused in the stomach wall were shown by expansive tumor formation and destruction of the wall tissue. The only difference between this course and that seen in the development of carcinoma, was that the proliferation process was absent. Three exposures are taken on the same film in short sequence, five to seven days after injection, so that three phases of the peristaltic wave are registered. A marginal rigidity is shown at the point of injection, even though the injection was confined to the submucosa. The purpose of this work is to note how early neoplastic gastric processes might be detected.

An innovation of developing a method of urography based upon oral administration of a dye seems to open new possibilities, but its value has not yet been appraised.

As regards radiotherapeutics, no startling new discoveries have been made in the search for a cancer cure. Coutard has recreated a great interest in the fractional method of giv-

ing intense cumulative doses of radiation over a period of from 30 to 40 days; this is especially advocated for malignant conditions of the pharynx, tonsils, hypo-pharynx and glottis. It is based on the frequent administration of small numbers of r units per minute, and giving these for several hours each day, so that the effect on cell division of the malignant tissues is prolonged and mitosis retarded or abolished.

The present vogue of exceedingly-high-voltage x-ray therapy seemingly has some theoretic advantages, but there is quite a conflict of opinion. Some well-organized groups are developing an experience table, that eventually should be decidedly valuable.

A highly important resolution, affecting the radiation therapist as well as the patient, was adopted by the American Radium Society, the

American College of Surgeons and the Section of Radiology of the American Medical Association, to the effect that, in cancer treatment, sufficient doses must be given to destroy the malignant lesion, even at the risk of possible damage to the surrounding normal tissues. The legal implications are important and thrust the misapplication of the term "burn" into oblivion. However, only properly trained and skilled therapists should be allowed to use such powerful and subtle agents.

In the field of benign conditions, irradiation is increasingly being called upon for ameliorating obscure conditions not otherwise amenable to treatment, notably in many endocrine disturbances, more particularly essential hypertension, pituitary headaches, menstrual disorders, arthritides, etc.

M. J. H.

Progress in Physical Therapy

THE battle of the diathermies is still in progress, working towards something scientifically conclusive. The enthusiastic claims of biologic specificity for different short waves have yet to be ascribed incontrovertibly to anything else than the physiologic characteristics of the heat thereby engendered. It has been established that, unlike long-wave or conventional diathermy, the short and ultra-short waves induce more penetrative and clinically effective heat when applied with cuff electrodes; also that the plate electrodes are more effective when not applied directly opposite to one another. This newer form of diathermy will be more intelligently, safely and beneficially utilized when the physics of this conveniently applicable thermal agency become better understood.

The cold-quartz ultraviolet generator is gaining in deserved popularity because of the time-saving, diffused radiation from all surfaces of the official applicator; persistently unimpaired intensity; easy application, due to negligible weight of the holder; and portability.

The encouraging results from mecholyl and histamine ionization for chronic rheumatoid arthritis and certain localized pathoses of the peripheral circulation, have initiated a renaissance of galvanism. As a result of increased demand, manufacturers are laudably vying with one another in producing increasingly low-priced ionization or galvanic apparatus.

To lessen the possible danger of undue stress, a rather imposing colonic irrigator

automatically gauges the fluid pressure to within the safe limit of one-half pound, with a return suction of not to exceed a two inch vacuum. The long colonic catheter is being rapidly displaced by the equally effective but less hazardous short rectal tube.

Automatically controlled vacuum "boots" for administering alternate suction and pressure, as a vasodilative method for relieving a variety of advanced peripheral vascular diseases, are quite recent innovations which are being enthusiastically endorsed by a number of hospitals and clinics.

The inhalator conveniently and physiologically replaces all forcibly applied sprays and inadequately applicable inhalations, of both the simple and the complicated types. An electrically-heated, medicated fluid is vaporized and applied through a nasal or an oral applicator, and therapeutically inhaled during the natural process of breathing. It is ideal for adjuvant treatment, in the home as well as the office, of various acute and chronic affections of the nose, throat and lungs.

The Oxinjector is a portable, ingenious mechanism for the hypodermic administration of oxygen and other gases. This newly available apparatus for safe and perfect control of slow or rapid absorption of oxygen for more or less prolonged applications is going to revolutionize our present wasteful, expensive and cumbersome methods. It should also scientifically popularize a much needed extension of oxygen therapy for a multiplicity of chronic conditions of suboxidation, so exten-

sively within the domain of physical therapy.

Apropos to the recent scientifically approved investigations demonstrating the electrical or galvanometric reactions of the body, both in health and disease, the Micro-Dynameter or Ellis type of galvanometer should be of great interest and practical value. This unique diagnostic accessory definitely and visually records the electro-chemical balance of the body, both generally and locally, and also is a reliable indicator of normal and abnormal oxidation.

The Elliot device continuously pumps hot water, at a delicately controllable heat and with a definitely regulated pressure, through distensible rubber applicators, adapted to snugly fit the various orifices of the body. It is a simple, non-electrical method of applying heat wherever a localized, intensive and prolonged hyperemia may be thus indicated.

The Wilimac biterminal needle electrodes enable the operator delicately and easily to control electrocoagulation of the cervix, turbinates, facial blemishes, and other small or larger growths, benign or otherwise, to any minimum or maximum degree desired.

The Vibratherm and the Vitaphore are two handy, pocket-sized appliances for radiating infrared, with or without vibration, intrarectally and vaginally, and to the face and other small surface areas, respectively. The G. E. 'Zincjell' and electrode greatly simplify nasal ionization for chronic rhinitis and allied conditions.

Despite considerable research and clinical experience, the exact indications for and technic of hyperpyrexia are still to be definitely determined. Such heroic treatment has proved somewhat ameliorative in certain intractable conditions, but is not to be advised too optimistically, and it still remains a decidedly hospital procedure.

Progress in physical therapy is materially due to the conscientious, scientific manufacturers who are developing so valuable and varied an armamentarium. Equal progress in professional understanding of the physics and physiology will also materially conduce to the correct evaluation, choice and application of such physical therapy appliances.

J. E. G. W.

NOTES AND ABSTRACTS

Diathermy in Chronic Deafness*

ADVANCED chronic catarrhal deafness is one of the most baffling diseases for the otologist. We know that heat has a relaxing effect on spastic conditions in general. The technic of utilizing diathermy in chronic catarrhal deafness is as follows:

1.—The patient should be seated in a comfortable chair, placed to the right or left of the diathermy machine.

2.—Cocaine (8-percent solution) should be applied once, with an applicator, to the floor and sides of each nasal passage as far as the posterior pharyngeal wall.

3.—While the cocaine is taking effect, cotton should be wound on the triangular ends of the nose and ear electrodes in a cylindrical (not conical or spindle-like) way, care being taken that the points of the electrodes are well covered. Cotton thus wound should give the electrode-ends a thickness about 25 percent more than the insulation on the shafts of the electrodes and, so far as possible, should be equal in all four electrodes.

4.—The cotton-covered tips of the electrodes are then dipped in warm physiologic salt solution and any excess of the fluid is gently

squeezed out, care being taken not to squeeze them too dry.

5.—The ear electrodes are inserted into their respective swivels from inside outward. Then, taking hold of the ear pieces and with the straight bar on top of the head-band forward, the operator places the head-band astride over the vault of the patient's head. The ear pieces are moved upward or downward until they are in horizontal alignment with the external meati, when each electrode is gently pushed into its meatus just short of touching the tympanic membrane. The swivel action of the electrode ball facilitates the introduction of the electrode, saving the patient discomfort. Should the electrode touch the drum, which fact will be announced by the patient's wincing, it should be pulled out about 1/16 inch, to save irritation then and during the treatment by the current.

6.—Next, the nasal electrodes are introduced in contact with the floor of the nose and until the posterior pharyngeal wall is reached.

7.—Over the outside ends of the aural and nasal electrodes are slipped the clips of their respective cords, which have their distinguishing colors. When one ear only is to be treated, the electrodes belonging to that side alone are connected and the cord belonging to the un-

**Laryngoscope*, Mar., 1935.

treated side is disconnected on the current controller.

8.—The dials on the duplex controller are set at maximum and one of the gaps of the diathermy machine is slowly opened; or, if it is a newer type of machine with fixed spark gaps, the controller is turned on until the meter registers 60 milliamperes. Under no circumstance should the meter alone be depended on, as in my experience, meters as well as patients' resistance vary. The only reliable guide should be the patient.

For the first few seconds, during which the cotton tips are getting warm, the current should not be advanced. The patient should again be told that comfortable heat is what is wanted and that, if the heat becomes too intense, he should immediately tell the operator. If one ear begins to feel too hot while the other is still cold, the controller connected to the hot side should be retarded. If both ears become too hot the current should be reduced by the main controller of the machine, or by both knobs of the controller.

9.—The treatment should last 15 minutes, at the end of which the current is turned off at the main switch, the ear electrodes are pulled out, the cord clips are disconnected, the nasal electrodes are removed and the head-piece lifted up and removed from the patient's head.

10.—Immediately following the diathermy treatment, pneumatic massage is given, which is followed by appropriate sprays and politization or catheterization.

The following conclusions will be helpful in guiding one in the technic of the method described:

A.—Many cases of advanced catarrhal deafness are amenable to the combined diathermy treatment.

B.—Diathermy, in the ordinary chronic deafness, is a valuable adjunct to the routine treatment.

C.—The treatments must be taken without interruptions or without too long intervals between them.

D.—The technic must be carefully carried out by the otologist himself, in order to obtain good results, as well as to avoid harmful effects.

E.—Ototherapy, without vibratory massage and inflation immediately following it, is not of much value.

F.—I have reasons to believe that, besides chronic catarrhal deafness, recent nerve deafness, following such infections as erysipelas

and chronic discharging ears, is benefited by ototherapy.

G.—Chronic nerve deafness and otosclerosis cases are not benefited by it.

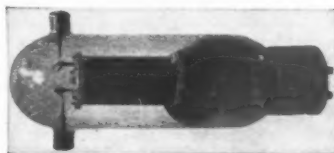
D. M. YAZUJIAN, M.D.

Trenton, N. J.

Aids to Hearing

IF the hearing capacity of a patient is 60 percent or less, he should be using one of the electrical or mechanical aids to that function which are now available, and not wait for such improvements upon them as may be made in the future. Such a course is just as rational as using aids to sight before one becomes totally blind. In a purely conductive lesion, such an aid is all that is needed to restore hearing to normal.—Drs. V. O. KNUDSEN and I. H. JONES, in *Laryngoscope*, Jan., 1935.

NEWS



New Short-Wave Power Tube

THE new Westinghouse short-wave power tube for 6-meter diathermy machines (shown above), has a tungsten filament, with complete insulation of the plate assembly from the filament stem and with plate and grid connections brought out of the top of the bulb, to facilitate simpler wiring in short-wave circuits.

X-Ray Stereo-Mirror

INFORMATION has been received that there will soon be ready for distribution an inexpensive and highly portable little apparatus, in the form of a specially designed mirror, which will permit anyone whose eyes are normal or slightly myopic to view a single or double ordinary flat x-ray film (or even a photograph or half-tone) stereoscopically*. This apparatus should be a great help to all whose x-ray equipment does not include a stereoscope, and, in fact, to physicians in general.

*Made by the Nu-Mirror Co., Bridgeport, Conn.

THREE FACULTIES

Instinct relates man to the animal world; intellect unites him to his fellow man; while intuition reveals to him the world of spiritual values.
—ALICE A. BAILEY.

PROCTOLOGY



ASSOCIATE EDITOR

WILLIAM A. HINCKLE, M.D., Peoria, Ill.

The Enema and Colon Irrigations

By Horace W. Soper, M.D., F.A.C.P., St. Louis, Mo.

THE chief current crimes against the colon are: (1) The cathartic habit; (2) the habitual employment of water enemas; and (3) colon irrigations.

Purgative drugs should never be given in cases of spastic constipation. The atonic colon often needs a gentle stimulus, such as small, graduated doses of cascara, the lapactic pill, or any similar "favorite pill." Care must be taken, however, to avoid toxic drugs, of which phenolphthalein is the most popular. Many pharmaceutical manufacturers have incorporated it in their oil and agar mixtures. It is a dangerous drug and is *never indicated therapeutically*.

The Cleansing Enema

The ordinary enema of water or soapsuds, for the immediate evacuation of colonic contents, is useful in acute conditions. The habitual use of the enema for chronic constipation is not to be recommended, inasmuch as it may produce injury to the colonic mucosa, as emphasized by Friedenwald and Feldman¹. Moreover, infectious material is likely to be introduced, and last but not least, the water or saline solutions are readily absorbed by the colonic mucous membrane. A toxic solution of fecal matter is thus produced. Furthermore, the patient is deprived of the use of any rational method for the restoration of colonic function. The practice of advising patients to use a small, daily, cool-water enema cannot be too strongly condemned.

In cases of severe atony and dilatation of the lower colon, the daily use of an evacuant enema may be imperative. In such conditions, the solution should not consist of absorbable material. The original experimental work of Goldschmidt and Dayton², which has been confirmed by others, developed that the colonic mucosa is impermeable to the passage of the sulphates, while the chlorides and

other salts quickly passed through the wall of the colon into the blood stream. Therefore, if it is necessary to use the enema habitually in cases of extreme atony of the colon, I recommend the employment of a three-to-five-percent solution of sodium sulphate. Meltzer found that solutions of sodium sulphate incited contraction of the gut, while solutions of magnesium sulphate produced relaxation or dilatation of the intestine. In emergencies and in postoperative conditions, when we know that a spasmodic tendency is present in the lower colon, the magnesium sulphate enema (ten-percent solution) is useful.

In cases of strong contraction or spasm of the recto-sigmoid region, as demonstrable by sigmoidoscopy, the following technic is advised: With the patient, in the proper knee-chest posture, the sigmoidoscope is introduced and direct applications of a fifty-percent solution of magnesium sulphate are made by means of a long cotton applicator. Relaxation can be demonstrated in a few minutes.

Spasmodic contractures of the iliac colon can be diagnosed by palpation of the abdomen, with the patient relaxed in the recumbent posture. In the normal colon, the gut in this region can be induced to contract by manipulation of the palpating hand, but it will again relax its tonus. In cases of extreme atony, no such contraction can be elicited. In spasmodic contractures of the iliac colon, it can be felt as a firm, hard, unyielding cord, which never relaxes. Palpation usually elicits painful sensations. Treatment by means of magnesium sulphate solutions is very efficacious. The technic is essentially the same as described above in the spastic recto-sigmoid, with the exception that a soft-rubber, 24-F urethral catheter is introduced through the sigmoidoscope and the solution injected by means of a piston syringe. The patient as-

sumes the dorsal decubitus immediately after the injection and retains the solution as long as possible. Usually a series of eight or ten such treatments, every second day, suffices to overcome the spasm. At the same time a "smooth diet" is employed and all laxative drugs avoided.

Colonic Irrigation

The majority of physicians have ceased to use the so-called colonic irrigations, but the "internal bath" is still employed by the commercial irrigation specialist. My experience is that, the more one irrigates, the more mucus one gets. In other words, irrigations incite the secretion of mucus. If continued long enough, the "foul smelling material" can be secured in patients in whom the colon is really normal. The material is, in fact, the normal contents of the ileum when subjected to such treatment.

The therapeutic results are of doubtful value and no lasting benefit is secured. Of course, some introspective neurotics claim to be subjectively improved. Moreover, direct inspection of the mucosa of the rectum and lower colon by sigmoidoscopy has convinced me that injury unquestionably results from its persistent use.

Reliance on irrigations deprives the patient of those measures which are so essential in the restoration of colonic function, which is based on a right concept of the principles of colonic physiology, which might well be briefly recapitulated here:

Colon Physiology

The studies of Hurst³, Holzknecht⁴, Barclay⁵, Case⁶ and others, disclose that the colon is emptied by a series of mass movements. When the fecal column, which has been held up at the rectopelvic juncture, enters the rectum, the desire to defecate is provoked. As Hurst⁷ has shown, this desire is not due to stimulation of the sensory nerves, as they are absent in the rectum, except in the mucosa of the anal canal. The reflex is established by means of the "muscle sense" of the distended rectum. My clinical observation is that the urge to defecate does not occur until the fecal mass engages the anal canal. The first mass movement empties the rectum and part of the pelvic colon. Secondary mass movements occur and continue until, under normal conditions, the entire large intestine below the splenic flexure is completely emptied. Hurst has demonstrated that about thirty-three hours' time is required for a meal to be entirely evacuated from the gastro-intestinal tract. Food taken nine hours before the act of defecation should reach the splenic flexure and part of it appear in the feces.

Carlson⁸ and Alvarez⁹ add emphasis to the rôle that motor disturbances play in the pro-

duction of gastro-intestinal symptoms. Cannon¹⁰ as well as Meltzer¹¹ has shown that the gastro-intestinal movements occur in a definite, orderly fashion. The work of Alvarez¹² reveals a gradient of irritability, from the cardia to the pylorus. He suggests that the entire gastro-intestinal tube may have been originally so constructed that the rhythmicity of any one segment varied inversely as the distance from the pharynx. We are, therefore, justified in visualizing the gastro-intestinal tract as a beautiful mechanism, whose motor apparatus functions in a rhythmic, orderly fashion, concomitant with appropriate, specific chemical changes.

The character of the feces is important. Burnett¹³ first accurately described the normal fecal mass. It is firm in consistency and is made up of small masses, welded together in a columnar form. He terms it the "unit stool." I have confirmed Burnett's contention, that many grave states of malnutrition may be produced by "incomplete digestion," due to colonic hypermotility. I pointed out years ago that our worst cases of intestinal toxemia are seen in the chronic diarrheas. Unfortunately the laity and, I regret to say, many physicians are still obsessed with the notion that the human colon is a sewer that should be kept flushed out.

Carlson says, "Auerbach's plexus is the brain of the intestine." It is a brain much older and better organized than that of man, who lightly attempts to interfere with a biologic function established in all forms of life throughout the ages. Abdominal or colonic massage is absurd and dangerous. I have records of a number of cases in which perforation peritonitis has followed vigorous massage of the abdomen. A weak-walled ulcer, appendix or gallbladder may be ruptured. Who has the presumption to state at what time the intestinal contents should move forward? It is one's duty to attempt restoration of normal rhythm, instead of using methods that tend toward further disorganization.

When one opens the lower colon of any healthy vertebrate, including man, one will find formed, desiccated fecal matter. It is obvious that restoration of function cannot consist in changing the contents from the dry to the liquid state by the habitual use of drugs, enemas and irrigations.

Schmidt and Strasburger¹⁴ found that the bacterial content of dried feces is about 33 percent. MacLeod¹⁵ estimated 25 percent of bacteria in dried feces. It is obvious that irrigations cannot change the bacterial flora of the colon. It is not possible to wash the membrane clean, because fecal contents must continue to enter the colon from the ileum.

Colonic Lavage

The colon is readily lavaged by the same

method employed in gastric lavage. All the apparatus that is necessary is a large glass funnel, to which is attached a large-caliber stomach tube. The funnel is raised and lowered in the same manner employed by the roentgen-ray technician in the administration of a barium enema. The use of the long rubber tube, formerly much in vogue in the employment of the "high enema," is obsolete, as I pointed out in my article in 1909¹⁶.

The Oil Enema

The oil retention enema has definite clinical indications. The dose is usually six to eight ounces, introduced through a 28-F. ordinary urethral catheter, to which is attached a large rubber valve bulb—a simple apparatus which the patient can easily use. The oil is given at bedtime, with instructions to retain it all night. I demonstrated many years ago that the oil quickly reaches the cecum. We formerly employed cotton-seed oil, but observed that some patients developed a fatty-acid dermatitis from its use. We found mineral oil to be a great improvement, inasmuch as it is not absorbed and furthermore has the great advantage of inhibiting or discouraging the growth of bacteria. It is of great value in patients suffering from recurring attacks of subacute ulcerative colitis. Spastic contractures of the lower colon respond favorably to it and the symptoms of mucous colitis are often completely allayed. It is also of great value in the treatment of colonic diverticulosis. A series of oil retention enemas is the best preparation for the patient who is to be operated upon for carcinoma and other lesions of the colon.

Recent studies in my clinic have demonstrated that the urine shows a rapid fall in the indican content after the employment of a series of oil enemas.

The Therapeutic Enema and Insufflation

The use of chemical solutions, formerly much in vogue in the treatment of dysentery, ulcerative colitis, etc., should be abandoned. They all produce irritability and spasm of the colon, and aggravate rather than cure the disease.

The insufflation of dry powder is a very useful procedure in inflammatory and ulcerative conditions in the rectum and lower colon. When the pathologic process is limited to the *ampulla recti*, the patient is placed in the knee-chest posture and the sigmoidoscope (small caliber, $\frac{3}{8}$ inch to $\frac{1}{2}$ inch) is introduced, the obturator withdrawn and the powder blown directly into the bowel by means of a special powder-blower,* equipped with a long tube. My final choice in such conditions is a powder consisting of equal parts of bismuth subcarbonate and calomel.

This powder has the advantage of adhering tenaciously to the mucosa, is strongly antiseptic and non-irritating. It is especially useful in the cases where the anal canal is involved. Furthermore, it is best to avoid the sigmoidoscope after the diagnosis has been made in such cases, and employ the 24-F. urethral, soft-rubber catheter, introduced directly into the rectum, insufflating the powder through the catheter. This is also the method of choice in the treatment of lesions higher up in the colon, where daily insufflations are necessary. One thus avoids the trauma occasioned by the daily passage of the instrument.

Bismuth subgallate is the best powder for higher insufflations, because of its lightness and more astringent qualities. I have demonstrated deposits of this powder as high as the splenic flexure. Care must be taken not to overdistend the gut. The powder blower is detached from the catheter from time to time and the excess air allowed to escape. One soon learns how much distention is desirable in each individual colon.

In old, chronic, ulcerative lesions in the rectum, direct applications of 25-percent solution of silver nitrate, under guidance of the eye, are often very useful. Care must be taken to dry the tube well before withdrawing it, to prevent any of the solution touching the anal canal. Polypoid growths are best destroyed by diathermy, as I have elsewhere described¹⁷.

A ten-percent aqueous solution of Mercuriochrome is of great value in the treatment of proctitis involving the anal canal. A three-eighths inch caliber scope is introduced and the cotton applicator wet with the solution is passed through the scope, which is withdrawn. Now the wet applicator is withdrawn through the contracted anal canal, literally squeezing its contents into the crypts and folds of membrane.

The Nutrient Enema

The introduction of the ordinary foodstuffs per rectum has been practically abandoned, because of the failure of the colon to absorb and utilize them. Water, weak solutions of alcohol, physiologic saline solution, and a three-percent solution of dextrose are readily absorbed and utilized. The Murphy drip method is to be preferred, but in some patients with a sensitive anal canal reflexes it is better to introduce slowly about four ounces of the fluid every two to three hours.

Conclusions

1.—The habitual employment of enemas is to be condemned, inasmuch as it is based upon an erroneous concept of the physiology of the colon.

2.—The practice in vogue, commonly designated as colon irrigations, is also unsound,

*Manufactured by the DeVilbiss Company.

unphysiologic, and has no place in the modern treatment of diseases and disordered function of the colon.

3.—Rational methods of treatment are suggested, with due consideration of the underlying pathosis and designed to restore colonic function.

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NOTES AND ABSTRACTS

Rectal Diseases and the General Practitioner*

HARVEY B. STONE, of Johns Hopkins, emphasizes that many patients suffer greater or less inconvenience, discomfort and ill-health from rectal conditions that could be promptly and completely cured, if the profession were more accustomed to examining and treating this large and important group of diseases. Early examination and treatment would also disclose many cases of cancer when there was yet hope.

Blood in the stool always calls for a thorough examination, though in most cases it is not of serious moment. Blood or bloody mucus in the stool, with a change in the patient's bowel habit, are early symptoms of rectal cancer. Blood and tenesmus are its two major symptoms.

Chronic fissure rarely yields to anything except surgical treatment. The best treatment is probably the complete excision of the fissure, so as to get a fresh wound surface, which heals kindly. At the same time, a thorough stretching or partial division of the sphincter muscle should be done, to overcome the tendency to spasm which is largely responsible for the pain.

For practical purposes, patients with hemorrhoids may be divided into three principal groups: First, the large number of people who have only slight trouble, with no subjective symptoms, and see blood only at rare intervals. These require little, if any, treatment. Second, there is a large class who have considerable annoyance at times, and then may go for months with no trouble at all. Such cases may well be treated by pallia-

tive methods, such as ointments, cold compresses, rest in bed, etc. The third class have frequent bleeding, prolapse and discomfort. For this class, surgery is the only treatment to be considered.

The injection treatment, he thinks, has a distinct and proper, but very small place in the treatment of hemorrhoids. It should be restricted to uncomplicated internal piles, that bleed but do not protrude and are not enlarged. In such cases, if properly used, it gives satisfactory palliative results. Unfortunately, cases so treated frequently need retreating in a year or two.

W. A. H.

Bleeding from the Anus and Rectum

BLEEDING from the anal orifice is a symptom that frequently is neglected. This bleeding, in itself, can be the cause of severe secondary hemorrhage. It may lead the investigator to the discovery of early malignant disease or of a benign tumor that might be precancerous.

Among the causes of bleeding from the anus and rectum may be mentioned: internal hemorrhoids; ulcerated, thrombosed, external hemorrhoids; anal fissures; anorectal fistulas; inflammatory rectal stricture; benign tumors and malignant conditions of the rectum and sigmoid; ulcerative conditions of the rectum and sigmoid, such as amebic dysentery, ulcerative colitis and tuberculosis; and trauma.

No patient who is bleeding from the rectum should ever be allowed to drift from the doctor's sight until he has made an effort to find the cause or causes for the symptom.—Dr. F. C. SMITH, of Philadelphia, in *M. J. & Record*, Sept. 7, 1932.

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A LIVING FOR THE DOCTOR

(The BUSINESS of Medicine)

Progress in Office Modernization

By Arthur Walsh, Washington, D. C.

Assistant Federal Housing Administrator

THE physician or surgeon who keeps thoroughly abreast of developments in medicine and surgery realizes that he should receive his patients in an up-to-the-minute atmosphere. But suppose he hasn't the ready cash with which to create such an atmosphere.

It is here that the Federal Housing Administration steps in with the specific. It makes it easy and desirable for the doctor to modernize and repair, change the arrangement of his offices, install the equipment which is so essential to the successful conduct of his practice, to bring it up to the hour.

This is done by making it possible for the man in clinical practice to obtain insured credit from private financial institutions on easy terms, which will enable him to modernize and rearrange his offices or clinic and re-equip it with the most modern devices.

Here are some of the things which may be done with insured modernization credit: The office may be completely done over and enlarged. Rest rooms and a waiting room may be added. Light, which is such an essential feature, may be provided by the installation of the most modern lighting effects. Equipment, which may be considered as a fixture, of the heavy, non-portable and durable type, may be purchased and installed. This would include the fluoroscope, static machine and other equipment of this general nature, now so widely used in physical therapy. The loan, as stated before, is arranged through private banking institutions, insured against loss on this type of credit by the Federal Housing Administration. There is one such bank, or more, in each community of importance in the United States and its insular possessions.

Since the element of risk on loans of this nature is virtually eliminated, there is no hesitancy on the part of the banker, as there has been in the years immediately passed, to release money to clients. In fact, they show every desire to reap the benefits of this new business. You will find that they will meet any responsible person more than half way and be more than willing to cooperate. This is aptly illustrated by the fact that, in the comparatively short while in which this leg-

islation has been in operation—August, 1934—upwards of \$190,000,000 has been loaned for modernization and repair.

The process is a simple one. The person desiring a loan goes to an approved lending agency and states his needs. The banker will, of course, satisfy himself on the soundness of the risk and require satisfactory security where necessary.

When the loan is granted, the applicant will agree to pay charges which may not be in excess of the equivalent of a \$5 discount for each \$100 face value of a one-year monthly installment note. It is to be repaid in equal monthly installments and these may be spread over a five-year period, if necessary.

If the applicant's office is in a home, he is limited to a maximum credit of \$2,000. This may be used to modernize his home as well as the office. If the office is in an apartment house or business structure, credit may be obtained for as much as \$50,000 where justifiable. There are, of course, few instances in which a loan of this size would be required. Such exceptions would probably be the large diagnostic center maintained by a physician, privately operated hospitals, etc.

The physician, himself, knows best what he needs. All realize that a clean, bright, well-lighted, sanitary office and modern and efficient equipment, which have been beyond their means for several years, are essential to success and the maintenance or increase of income.

Things move fast in the sciences of medicine and surgery. Many devices, which were standard ten years ago, are now obsolete and antiquated; the office is no longer spic and span. Practice does not stand still. It must either go backwards or forwards. Modernization and repair point the way up front.

Just imagine the benefit to the physician, as well as to the patient, if the establishment could be thoroughly modernized—if the physician and his associates could realize an ambition which has been denied because of the difficulty of obtaining the necessary credit, even though a sound credit risk. For, until the coming of the National Housing Act,

under which the Federal Housing Administration functions, the lending agencies were reluctant to advance credit for such purposes. The physician with his office in a dwelling encountered the same difficulty.

The young physician, just finishing his education and going into practice during the past five or six years faced a great handicap. Unless he had inherited money or could call upon friends or the family, he found it next to impossible to equip his offices properly. He will find now that, if he is a good credit risk, he may get the proper start through insured modernization credit.

Eligible improvements cover a wide field. Ordinarily any repairs, alterations or rearrangements to the building or structure are eligible for loans.

Eligible equipment includes such devices as x-ray machinery, an electrocardiograph, treatment tables and examining and treatment chairs, platform scales, installed pressure and suction pumps, sterilizers, compressors, gas and oxygen apparatus and other devices of this type.

Of course, such equipment, to be eligible, must be of the non-portable type, to be used by the physician in his office and not for out-patient work.

There are a great number of other devices which may be eligible, but upon which rulings have not been made. The physician would do well to consult the dealer, who, in all probability, has posted himself on the question of eligibility. If he has not, the dealer could get a prompt ruling from the Housing Administration in Washington.

However, the experience of more than a year, with insured credit approaching the \$200,000,000 mark, has convinced the bankers that defaults on this type of credit are so small as to be practically negligible and the applicant will discover that "character" is a large element in obtaining the credit.

With this explanation, it should be clear to the man in medicine that there is no longer any obstacle in the way of acquiring a modern office, modernly equipped.

It should only be necessary for him to ascertain his needs, determine the cost and go to his banker. It is a quick matter for the lending agency to approve or disapprove the credit; then the money is ready. It is sometimes possible to have the repairs or alterations made and the equipment installed before the first monthly payment is due.

The banker, of course, would not be willing to advance credit for more than the income prospects of the physician would justify. It is not good banking business to have an applicant assume a financial burden which he could not be expected to discharge.

Requirements or standards for cleanliness, sanitation and comfort are probably higher in the doctor's office than in any other business or profession. The walls, floors and ceiling, should be so constructed that they may be easily scoured and kept clean. The lighting arrangement should be that which is especially designed for the practice. The heating arrangement should be at all times comfortable.

A thoroughly modern office gives the patient confidence. Also it enables the physician to do his work better, both in diagnosis and treatment.

Modernization has another attractive feature—a distinct benefit, although indirect. It puts men to work, gives them money with which to pay their bills and pay for the well-being of themselves and their families. The equipment purchased also means that more men will be put to work in its production. Modernization has proved a great stimulus to the economic recovery of the nation. It will help you.

Federal Housing Administration.

NOTES AND ABSTRACTS

Physical Examinations

NOTHING so impresses a patient as a thorough physical examination. It is the deciding point in the patient's mind whether the physician he has called upon to consult is capable or incapable; whether he shall continue his visits to this physician's office or seek treatment elsewhere. Have you ever wondered why a patient, whom you knew to be in need of treatment, did not return after the first visit? And might you not recall that you did not make a physical examination?

Every new patient should be made to strip

and be given a complete examination. No man can tell what lies underneath the clothing of a patient unless the clothes are removed. And the patient knows that the Doctor cannot see through his clothes. It is useless to look wise and neglect to make an examination, for the simple reason that the patient will go away dissatisfied, and call on some one who will.

The indifference to the making of physical examinations by physicians is the cause for the growth of certain institutions devoted solely to the commercialism of this particular branch of medicine. It is a good business and

the fees are large. One institution charges a fee of \$25.00.

The fact that patients are willing to pay this fee is sufficient proof that they wish their bodies examined. And whether it is ethical or not for such institutions to advertise is not questioned by the patient. The advertisement gets the patient. Ethics is non-productive.

A physical examination should be charged for as a separate fee from the general office or house visit. This fee should be fairly large, but within reason. The patient expects to pay a good fee, and values the examination, in many instances, according to what he has to pay for it.

Patients will invariably mention the fact that they were given a good examination by their Doctor. A physician who does not examine his patient gives the patient nothing to talk about. This is business lost through lack of mouth-to-ear advertising, which is the only ethical means allowed physicians to obtain patients, and there can be no practice without patients. If the Osteopath and Chiropractor can examine his patient and satisfy him, the physician can give a better examination and better satisfaction. The physician is an M.D. and stands at the top of his profession. To retain this status he must do as much or more than those on a lower plane.—*Therapeutic Leaves.*

A Brave and Earnest Physician

A LETTER came to my desk a few weeks ago, from a physician who, by the calendar, would be considered old, but whose heart is so warm and whose mind so alert that he puts to shame most of the recent graduates.

This letter was such an inspiration to me that, in view of the fact that he is known to many of the readers of "C.M.&S.," I asked and obtained the writer's permission to publish parts of it, for the upliftment and heartening of those who feel discouraged under far lighter burdens. Here it is:

"Dear Dr. Lake:

"I had a slight hemorrhage in the right cortical region fourteen months ago. Following this I had a period of such suffering for ten weeks, with the thalamus syndrome, that no man can understand who has not experienced it—pain that opium in maximum doses would not relieve.

"Finally this eased up considerably, but was immediately followed by frightful neuritis of the whole left hemiplegic side. I am left with a contracture which is important, and still suffer a great deal of pain in my knee and hip. Unfortunately, the shoulder and axilla are highly neuritic and I can't use crutches.

"The pain is much better now and one of the greatest afflictions is limitation of action. Though sitting in my chair, I have been back at work for three or four months—very ac-

tively at work—and enjoying every minute of it, and I believe doing some of the best work of my life in treatment of chronic disease, but especially in mastering some very difficult diseases of the eye—cataract, neurochoroiditis, glaucoma and other conditions—by means of organotherapy. There is here a rich field for usefulness.

"I am looking into the face of the picture of a very beautiful young woman, who was given up by three oculists to hopeless blindness from neurochoroiditis. I cured her in six months, and as I look into her beautiful eyes I am humbled with the majesty of power that thrills me—the power to do such things when we really know. I have accumulated a vast experience, and some good day will make my report.

"You will be glad to know that I am right-handed and that my mind escaped entirely in this frightful illness and everything is all right. I have kept up a pretty heavy correspondence and am now beginning to write again.

"I may look like a picture of helplessness, sitting in my chair, but by the Great Eternal, or something like that, I am full of life and pep and even action. I may never walk again, but I can think and philosophize, and I love life just as keenly as ever; in fact, I am getting lots of fun out of life, not only from waiting on patients, but in re-reading hundreds of volumes in my library.

Dr. J. S. LANKFORD."

If Dr. Lankford can do what he is doing, what ought the rest of us, who have our locomotion and all or most of our powers and faculties, to be doing in these trying times?

GEORGE B. LAKE.

Waukegan, Ill.

HE PLAYS NO FAVORITES



Courtesy Chi. Herald & Examiner.

THE SEMINAR

"A MONTHLY POSTGRADUATE COURSE"

(NOTE: Our readers are cordially invited to submit fully worked up problems to the Seminar and to take part in the discussion of any or all problems submitted.)

Discussions should reach this office not later than the 5th of the month following the appearance of the problem.

Address all communications intended for this department to The Seminar, care CLINICAL MEDICINE AND SURGERY, Waukegan, Ill.)

Problem No. 11—(Medical)

Presented by Dr. G. W. Benitz,
Wathena, Kans.

RECAPITULATION: A hardworking farmer of 46 years, the father of 7 healthy children, has been having, for the past 20 years, occasional attacks (3 to 5 times a year) of severe nausea and vomiting in the morning, which last for a day or two and are relieved only by good-sized doses of morphine. His pulse is full and strong at the beginning of these attacks, which are most frequent in the spring and summer, but grows weaker as they continue. The attacks often have no relation to the taking of alcohol and are not relieved by alkalies or bismuth. Roentgenograms show no stones in the kidneys or gallbladder.

REQUIREMENTS: (1) On the basis of this history, suggest diagnosis and treatment; (2) What further information would be needed to make a final diagnosis?

Discussion by Dr. E. C. Junger,
Soldier, Iowa

THIS problem, no doubt, is entirely medical, by which I mean, not only medication, but physical therapy. Typhoid fever can leave scars in the intestinal mucosa and adhesions in the peritoneal cavity, also liver damage that will cripple that organ's function.

This man has a catarrhal gastritis, due to a general toxemia probably caused by alcoholic drinks that were very irritating during prohibition days. They are bad enough at any time, but even now good liquor is too expensive and most drinkers buy cheap stuff. Is this man's blood pressure high? We need a gastric analysis and liver function test. I would recommend diathermy over the liver and calomel and quinine courses every few weeks, milk diet and no drinks of alcoholics. A barium meal and pictures of its progress may show something pathologic in the intestinal tract. How about malaria? This case should improve, if the man cooperates.

Discussion by Dr. G. M. Russell,
Billings, Mont.

THE history in this case is rather vague. There is not much to base a diagnosis upon. Without further examination, one man's guess is about as good as another's. It may be a purely spastic affair. It may be that this man has an infection of the gallbladder, with acute exacerbations lasting for a few days. He might have considerable constipation with a reflex upset of the stomach. He might have an allergy against certain foods, producing such attacks. Therapy would have to be entirely empiric on such a basis.

I would want a fractional gastric analysis; x-ray study of the stomach and gallbladder, following barium through the intestinal tract; gallbladder drainage and thorough investigation of his habits of eating and the character of his food, particularly preceding attacks.

Discussion by Dr. Geo. B. Lake,
Waukegan, Ill.

WHENEVER a man of forty-six years who, being the father of seven healthy children, is in all probability not syphilitic, and who appears to have no demonstrable gastrointestinal disease, suffers attacks of severe nausea and vomiting without any obvious cause in his manner of daily life, it is well to give careful thought to the possible presence of a heart lesion.

I suggest a careful study of this patient's heart by all the ordinary methods of physical diagnosis, keeping careful, four-hourly records of his pulse rate and taking his blood pressure readings two or three times a week for several weeks. If it is possible to have an electrocardiogram and a teleroentgenogram of his heart made, I believe that might give some valuable information.

The fact that he has had these attacks during periods at which he has been taking no alcoholic liquors at all, practically rules them out as a cause of his trouble.

Problem No. 1—1936 (Medical)

Presented by Dr. Edmund Lissack,
Concordia, Missouri

MISS M. F. G., 45 years old; single; menstruation normal; family and past personal history without significance, complains of rheumatism and constipation. Has always been constipated. Even as a girl she had to take laxatives often—during the past fifteen years almost daily. The rheumatism began about a year ago. At first the left shoulder was painful and then the fingers became stiff and painful. Soon all joints of the body were involved, and she has been confined to bed, off and on, ever since. The last attack was for three weeks. The knees are worse now, and so stiff and painful that the patient is unable to stand and walk. She has had some fever (around 100° F.) for the past few weeks; has had no chills; the appetite is poor; she sleeps well and maintains average weight; palpitation, a little; no dyspnea; slight edema in the ankles; very slight cough; feels blue and depressed much of the time and worries easily; backache along entire length of the spine. Last winter she did not menstruate for five months. During this time she shook all over for about a week before the menses resumed.

Height, five feet six inches; weight, 140 pounds; temperature, 98.8° F.; pulse 80; respiration, 20; blood pressure, 130/80; blood: hemoglobin, 87 percent; red blood-cells, 4,580,000; white blood-cells, 6,950; polymorphonuclears, 70 percent; large lymphocytes, 6 percent; small lymphocytes, 16 percent; Wassermann test, negative; urine: straw color; clear; specific gravity, 1.001; sugar, negative; albumen, a trace; feces: brown; soft; parasites, negative; blood, negative; hearing, normal; vision, normal.

The knees are swollen and usually flexed

about 20 degrees; it is quite impossible for her to bring her knees down on the bed or to let one extend them when the thigh is flexed by lifting the limb from the bed; there seems to be some intra- and extra-articular thickening, but no increased free fluid; slightly sensitive to pressure; flexion possible to almost a right angle.

Tonsils, septic. A few moist râles at bases of both lungs.

Kahn test, negative.

Spinal fluid: cell count, 3; globulins, negative; colloidal gold, 1112200000; Wassermann test, negative.

Ewald test meal: quantity, 21 cc.; free hydrochloric acid, 13; total acidity, 28; benzidine test for blood, positive; microscopic: a few squamous cells; numerous starch cells; a few yeast and fat cells.

Agglutination test for *Bacillus Meletemensis* is negative and for *Bacillus Abortus* is positive (1:160 dilution). Blood cultures show no growth after 24 and 48 hours, nor after 11 days.

X-Ray report: The negatives of the remaining teeth, genito-urinary tract, gallbladder region, gastro-intestinal tract, accessory sinuses and a 2-meter negative of the cardiac shadow all show no abnormalities.

Negatives made of the right knee show some hypertrophic changes on both the upper and lower margins of the patella, with evidence of some hypertrophic changes on the anterior aspects of the lower end of the femur and also the margin of the tibia.

This is the treatment I am giving her now: Rest in bed with traction on the knees, to overcome the flexion contracture; high-vitamin diet; intramuscular injections of 1 cc. of iron arsenite and manganese (P. D. & Co.), every other day.

Requirement: Suggest diagnosis and, especially, treatment, in detail.

CIVILIZATION

Civilization is by no means a matter of maintaining schools that teach children to read and write, or evolving printing presses and books, or running trains on schedules over wide areas, or putting airplanes in the heavens, or sending speeches and music without wires from New York to San Francisco. Those are the appointments and indications of civilization, true enough, but Civilization itself is quite something else. Men had civilizations, and highly complicated civilizations, when there never was a school or a book or a train or an airplane or a way to send messages from continent to continent. Civilization itself is the empowering of a great mass of people with the conscious knowledge, or realization, that by acting together in the face of any kind of emergency, they can get things done faster and better than any smaller numbers of them can do them alone.—WILLIAM DUDLEY PELLEY.

CLINICAL NOTES and ABSTRACTS

Acute Coryza: A New Method of Treatment*

INFORMATION concerning acute coryza (popularly known as "head colds") has attracted public interest, regardless of the source from which this information has come. Newspaper readers have greedily absorbed excerpts from scientific discussions on this subject and have accepted as truths, with equal enthusiasm, the blatant claims of the vendors of nostrums. The same interest in the problem has been manifested by intensive study in the research laboratories of many of our greatest scientific investigators.

The erratic and disappointing results from the use of various remedies led me to formulate the theory that the "head cold" may not be of bacterial origin and that the accompanying purulent discharge from the nasal cavity may be only a symptom of a secondary bacterial invasion upon a damaged mucous membrane, instead of a primary infection. I also reasoned that, if this were true, the watery nasal discharge would not show a bacterial count greater than that found on normal nasal mucosa.

Unfortunately, I have not the facilities in my office for making a bacteriologic study of each individual case which I have treated. However, in the three specimens which were examined under the microscope, I found the distribution of bacteria from a clear nasal discharge, obtained in the early phase of coryza, to have approximately the same bacterial count as a specimen secured by swabbing a normal nasal membrane. I noticed, also, that the number of bacteria increased tremendously as the nasal discharge became purulent. These findings coincide with those observed in allergic rhinitis, commonly known as "hay fever."

This led me to evolve the following theories:

1.—The "common head cold" is of non-bacterial origin.

2.—It may be due to an unknown allergic substance.

3.—This unknown allergic substance produces edema and subsequent congestion of the mucous membrane.

4.—The sneezing present is nature's effort

to remove this allergic substance, because we do not normally sneeze, although the nasal mucosa is thickly populated with bacteria at all times.

5.—The purulent discharge results from the bacterial invasion of the damaged, edematous membranes, rendered so by the presence of this allergic substance.

6.—Any drug that overcomes circulatory stasis and engorgement would act beneficially in aborting the cold.

Proceeding along this line of thought, I used various drugs well known to the medical profession. I tried epinephrin locally, hypodermically and intramuscularly, with evanescent results. I obtained from two to three hours' relief by the local application of ephedrine. The same result was obtained from the use of 4-percent cocaine and 10-percent antipyrin. From this I inferred that the duration of the relief period is influenced by the amount of the drug absorbed, the uniform distribution and absorption throughout the nasal cavity being prevented by edema.

I then used a new synthetic compound, p-methylaminoethanolphenol tartrate, better known as Synephrin Tartrate, and was rewarded by seeing a rapid decrease in symptoms, apparently permanent in most cases, for that particular attack. I have tried this on 100 patients in my office during the past year, in the following manner: Each patient was given, intramuscularly, 1 cc. of Synephrin Tartrate Solution, 10-percent, deep in the gluteal muscles, after which the patient was told to be seated in the reception room for a period of at least fifteen minutes, after which time he was again examined.

In those cases showing favorable results, the symptoms had abated, in from three to fifteen minutes after receiving the first injection, in every instance except two, and only these two patients required second injections. In a few cases I have had a complaint of vertigo, mild in type and transient in nature, as the sole constitutional reaction to this treatment. Routine recording of blood pressure readings before and after the injections revealed a rise of from 4 to 5 millimeters in a few cases, while in others no change was observed.

*Read at a staff meeting at the Delray General Hospital, Detroit, Mich., Dec. 7, 1934.

A careful record of 100 cases shows the following results: In 65 cases, immediate and permanent relief of symptoms; in 25 cases, partial relief, temporary in character; in 10 cases, no apparent result.

My conclusion is that Synephrin Tartrate is a useful and harmless medicament and should be tried during the early phase of acute coryza.

F. W. HYDE, M.D.

Detroit, Mich.

Typing Pneumococci in the Office

MANY practitioners have been reluctant to use specific therapy in treating pneumonia patients. Perhaps the most important reason for this hesitancy was the physician's belief that typing technic required hospitalization of the patient. However, simplification of the technic has now made typing of the organisms a procedure which the physician can perform in his office.

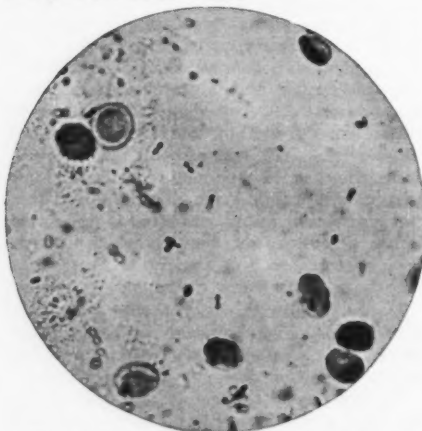


Fig. 1.—Negative "quellung" reaction. The photograph shows pneumococci in sputum. Type I antipneumococcic serum (rabbit) and methylene blue have been added, as described. The capsules, faintly seen, show no swelling.*

It is recommended that the patient's sputum be typed as soon as the history and physical findings definitely class the case as one of lobar pneumonia. If the patient is to be treated at home, sputum may be brought from the bedside to the physician's office in any suitable container; a carefully-washed-out Mason fruit jar may conveniently serve this purpose. The Sabin typing technic offers the simplest rapid method commonly used.

The equipment required for this test is a microscope, three hollow-ground slides, three cover-slides, a small quantity of alkaline methylene blue (Loeffler's), a platinum loop, a tube of petrolatum, and three small

*Cuts by courtesy of Parke, Davis & Co.

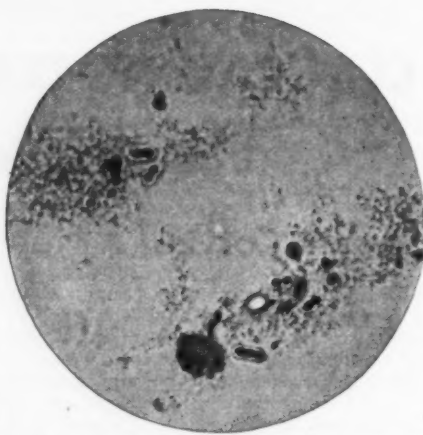


Fig. 2.—Positive "quellung" reaction: Type II antipneumococcic serum (rabbit) and methylene blue have been added. The capsules show distinct swelling, thereby revealing that the pneumococci are of Type II. The capsules are not only greatly swollen, but are highly refractile, and stand out sharply and unstained against the methylene blue background.*

bottles containing antipneumococcic serums (rabbit). With the platinum loop a small fleck of the sputum is placed on each of the three cover-slips. The loop is carefully held in a small flame until it is incandescent, to ensure sterility. With the sterilized loop a drop of undiluted antipneumococcic serum, Type I (rabbit), is then transferred to one cover-slip and mixed with the sputum. The platinum loop is again flamed, and a drop of Type II and, in turn, Type III antipneumococcic serum is mixed with the sputum on the other two cover-slips. Then alkaline methylene blue (Loeffler's) is added to the mixture on each cover-slip, the loop being carefully flamed before each transfer. Three hollow-ground glass slides, numbered I, II, and III for identification, and their edges thinly smeared with petrolatum, are then covered with the inverted cover-slips, so that the mixture in each is a hanging drop. After standing for two minutes the slides are examined microscopically with high-magnification or, preferably, an oil-immersion lens.

The capsules of pneumonia diplococci are not usually visible in hanging-drop preparations. Occasionally, when examined by an oil-immersion lens, these capsules may be visible, appearing as faint halos about the individual pneumococci. However, in such mixtures of sputum and the corresponding specific rabbit serum for typing, the pneumococci are surrounded by capsular zones of characteristically distinct appearance. This exaggerated swelling was called "quellung" by its first observer, Neufeld. Such a swelling of the capsule occurs only when the pneumococci have been mixed with the

rabbit antiserum of corresponding type. The swollen peripheral zone around the organism is now highly refractile, like ground-glass, because this capsule does not take the stain. Sabin states that this appearance is so characteristically distinct that the finding of even a single pneumonia diplococcus is sufficient to diagnose the type to which it belongs. If no capsular swelling occurs when the sputum is tested with types I, II and III antipneumococcic serum of rabbits, the infecting organism is regarded as belonging to group (type) IV.—*Therapeutic Notes* (P. D. & Co.), Nov., 1935.

Carbuncles of the Face*

CARBUNCLES of the face, especially those of the upper lip, nose and cheek, constitute a dangerous type of infection. They are prone to occur in young and middle-aged adults in apparently good health.

The regional anatomy and the pathologic characteristics of the infection account for the serious complications which may arise. The symptoms, both local and constitutional, are a reliable guide to the therapeutic indications. Subsidence of symptoms within 48 hours indicates a satisfactory therapeutic response.

Half or more of the infections within the danger area will respond to nonsurgical treatment, (anatomic and physiologic rest, with hot, moist dressings).

Exacerbation of symptoms, occurring under nonoperative treatment, is an indication for conservative surgical intervention.

Adequate treatment in the stage of extension will prevent complications in the great majority of cases. Central cauterization with phenol and the electric-loop cautery is a safe procedure, which relieves tension and establishes drainage in the refractory case.

Any form of treatment after the development of complications is necessarily unsatisfactory.

H. P. TOTTEN, M.D.

Los Angeles, Calif.

The Sedimentation Test

THE sedimentation test consists of the measurement of the speed with which red blood corpuscles settle. It appears to be fairly well established that, when this rate is greatly accelerated, some serious condition has set in. The one exception to this is pregnant women, who show a rapid sedimentation rate, regardless of how healthy they may be at the time.

The test, therefore, is not specific for any one condition, but may be regarded something in the same light as taking the tem-

perature—a valuable aid in separating out one group of conditions from another. Some of the points which seem to be fairly well established are as follows:

The rate is normal in the presence of benign tumors, but is increased in the presence of malignant tumors.

The rate is normal in allergic conditions.

The rate is normal in neurotics.

The rate is increased in tuberculosis.

The rate is increased in acute infections.

The rate is increased in pregnancy.

In the absence of a specific test for malignant conditions, this test offers the next best thing, inasmuch as it is generally possible to rule out the other conditions giving an increased sedimentation rate, by blood counts, bacteriologic examinations, pregnancy tests, etc.

THEODORE C. F. ABEL, M.D.

Chicago, Ill.

Control of Conception

A SUBJECT now appealing to the minds of many publicists and legislators is the control of conception among our women, and, as should be done, the medical profession has been appealed to as constituting the great majority of those fitted to devise and put into effect a design of such supreme importance. It is generally realized among thinkers that these men who are consistently and continuously scientists are the only persons fitted by training and experience to undertake a work that must bring about such far-reaching effects.

There have been proposed quite a number of reasons, a mere enumeration of which will suffice for the present, why a supervision of the rate of conception and birth should be instituted. Among those more prominently considered the following may be mentioned: tuberculosis, syphilis, pathologic mental trends; cardiac diseases and anatomic abnormalities; besides which may often be included the individual station and environment of the parents. In short, all the factors which may operate to alter unfavorably the life outlook of the individuals immediately concerned and, as a consequence, the unborn creature who must be considered as having claims on us as a potential unit of the social order which is to succeed us, must be kept in view.

A number of means have been proposed for attaining this consummation, although it should be recognized in advance that one of our great needs, at this time, is a vastly augmented knowledge of all the factors entering into the physics and the physiology of conception.

There is the so-called "safe period," which is bound to be relied upon by a large number of neophytes, both in the marital and the extra-marital classes, with a quite respectable

**West. J. Surg., Obst. & Gynec.*, Nov., 1935.

proportion of disillusioned individuals in the wind-up. We still have with us *coitus interruptus*, the condom (which is, at the best, an awkward appliance) and the douche method, entailing the availability of the means for douching, which is not always possible.

At present, and for some time, the widespread custom or practice appears to be to employ tablets, suppositories, but more particularly jellies, either alone or, as appears to be the more favored, in conjunction with occlusive devices, such as cervical caps. Something on the order of the latter appears to be indispensable, as we read of jellies which become more or less aqueous and of caps which are more or less of a misfit, permitting the spermatozoa to pass around them and succeed in effecting their physiologic arrival.

To many women, the necessity of visiting the family physician, in order that the chosen device (and it should never be chosen without his examination of the article or assemblage and his professional verdict on its effectiveness) may be placed in its proper position, is destined, on account of false modesty in many, to prove an insuperable obstacle. The likelihood in this case is that the woman, in her desperation, will accept the advice of a friend or confidant, who assures her that it is "dead easy" and sure to work, with the result of a bitter disappointment later, with all her cherished plans brought to nought.

In much the same case is the young woman for whom marriage is imminent: She will take many chances sooner that submit to a physical examination by the family doctor. Some doctors cannot yet see their way clear to an approval of the Gräfenburg intrauterine ring. And here, again, the newly-wed, and even many of those not newly-wed, will refuse to apply to their doctor for the indispensable skilled aid he is able to render. Moreover, some doctors, whether rightly or wrongly, look upon these with disapproval. Here, also, the skill of some may not be adequate for the correct and safe introduction of the ring which, in certain quarters, has received high praise; while from certain quarters has come a declaration of the virtual incompetence of the general practitioner for inserting the appliance.

The most hopefully suggestive, as it promises to prove the most generally available method—which it by no means is at the present time—is the toxic or antigenic effect of spermatozoa hypodermically injected. This method is not at present regarded as practical for use in a large series.

There is, in fact, much to be taken into consideration, and the worst, in point of practicality, is that the measure, if it is to be both safe and successful, will require most of those who attempt to employ it to undergo special

training or, as is more likely, anything like a general resort to it by the laity is going to create a new species of specialist. Again, its use in cases wherein it is not at all proper will, in all probability, place it in a class of reforms which will have to be under strict and competent surveillance, to prevent its use in the very class of cases from which it should be barred.

MILLARD F. CUPP, M.D.

Clarksburg, Ind.

Look for **FACTS AND COMMENTS** among the advertising pages at the back.

Phenolphthalein

PHENOLPHTHALEIN, in ordinary therapeutic doses, is a laxative, soluble in alkaline media. It passes through the stomach practically unchanged. It exerts its entire effect in the intestinal tract. According to the best information available, about 85 percent of it passes through the intestinal tract with the fecal matter, and of course is, therefore, not absorbed. The effects are mild and rarely if ever accompanied by griping pains.

It now appears that the most harmful effects resulting from the use of phenolphthalein will be found in a few individuals who are allergic to the drug and in whom it will develop varying degrees of skin irritations. These irritations will disappear soon after the use of the drug has been discontinued.—Dr. F. J. CULLEN, in *Standard Remedies*, Sept., 1935.

Get all you pay for. Read and use the ads.

Nonspecific Protein Therapy

IT may be said that nonspecific protein therapy, after twenty years of investigation and clinical trial, rests on a sound foundation and has now achieved a permanent though limited place for itself in modern therapeutics. In the realm of infectious diseases it has met with general acceptance in the treatment of: (1) infections of the eye; (2) acute and subacute pelvic infections; (3) certain infections of the skin; (4) a few generalized infections, such as sepsis and typhoid; (5) acute and chronic forms of infectious arthritis; and (6) cerebrospinal syphilis, especially dementia paralytica.

In the field of vascular disease, notably in thrombo-angiitis obliterans, foreign protein therapy also appears to have earned a secure therapeutic position.

The more important contraindications to intravenous foreign protein therapy are:

1.—Advanced arterial, renal or cardiac dis-

*J. A. M. A., Dec. 7, 1935.

ease. Patients with cardiac decompensation should not have intravenous therapy. On the other hand, rheumatic endocarditis with good compensation is not a contraindication.

2.—Allergic states or conditions of marked protein sensitivity, such as angioneurotic edema, giant urticaria and the like.

3.—States of extreme exhaustion following prolonged illness.

4.—Pulmonary tuberculosis, active or quiescent.

5.—Hemorrhagic conditions, such as hemophilia, bleeding ulcers and the like.

6.—Chronic alcoholism, for fear of delirium tremens.

7.—Marked nervous sensibility, such as that seen in hyperthyroidism and the like.

The contraindications for *subcutaneous* or *intramuscular* injections of protein are much less stringent than for the intravenous injections. Indeed, there are very few patients who cannot take with impunity small doses of bacterial vaccine, boiled milk or serum subcutaneously.

RUSSELL L. CECIL, M.D.

New York City.

One article which I recently read in *CLINICAL MEDICINE AND SURGERY* was, in itself, worth \$10.00 to me.—Dr. E. I. I. B., Tex.

Bacteriophage Therapy

OUR clinical experience with bacteriophage in the treatment of certain types of infections, chiefly carbuncles, furunculosis, abscesses and certain hand infections, is based on approximately 1,000 cases and has resulted in more than 90 percent of successes.

We consider our successful results to be due in large measure to the technic of application which we employ routinely and which is based upon direct contact of the bacteriophage with the infected tissues by means of generous daily applications. In furunculosis we use intramuscular injections of staphylolysate, the initial dose being 0.5 cc., increased to 1.0 cc. the second and by 1 cc. each following day until a maximum of 5 cc. is attained. In carbuncles smaller than 2 inches in diameter, staphylolysate, in quantities usually less than 1.5 or 2.0 cc., is injected directly into the necrotic area. Staphylojel is also applied locally. With larger carbuncles the initial treatment is the same as with the smaller, but after three or four days the slough is gradually removed with forceps.

The method does no harm in cases in which it does not succeed.—Drs. R. LAMPERT and F. F. BOYCE with ELIZABETH M. McFETRIDGE, of New Orleans, in *Am. J. Surg.*, Sept., 1935.

New Treatment for Sprained Ankles*

PROFESSOR Leriche, of Lyons, France, believes that, in joint injuries, there is no lesion of the ligaments themselves, but only in their nerve endings. From these torn nerve twigs, a sensory reflex, acting on the vaso-motor mechanism, causes the swelling and pain. Blocking of the sensory nerve endings stops this abnormal excitation.

We have treated several cases of sprained ankles on this basis, injecting, under strict aseptic technic, from 4 to 8 cc. of a 2-percent procaine hydrochloride solution into the injured periarticular area, after first injecting a few drops into the overlying skin, to produce superficial anesthesia.

In cases seen early, where there was no fracture of the bones, the results were dramatic. Pain disappeared immediately and the patients were able to walk out of the hospital or office without distress; edema disappeared rapidly and there was no period of disability; the symptoms, when once relieved, did not recur.

In cases seen several hours or days after the injury, the results were not so striking, but were better than those under the methods of treatment now in common use. This method is contraindicated in fractures (which must be ruled out by x-ray examination) and in patients sensitive to cocaine derivatives.

Drs. PERRY SPERBER and N. R. SABATINO.

New York City.

Look for THE LEISURE HOUR among the advertising pages at the back.

Progress in Preventive Medicine

(Continued from p. 35)

that when they are in the woodland they may keep a sharp watch for tick infestation, and especially keep their hunting dogs free from them as far as possible. Often dogs will be loaded with ticks, and except for the skin irritations, show no ill effects; while the same ticks, passed on to their masters, will produce serious infections.

As life becomes more complicated we must pay a higher price for health. Insects are playing an ever increasing part in the problem of keeping well. It is only by discovering and combating the sources of disease that we may hope to keep up progress in preventive medicine.

552 S. 58th St.

**Med. Rec.*, Nov. 20, 1935.

Progress in Pharmaceutical Chemistry

A FEW of the newest and clinically most interesting products introduced by our progressive advertisers are mentioned below, with a few words regarding their therapeutic uses.—Ed.

Abbott Laboratories, North Chicago, Ill.

A-B-D Capsules: A dependable source of vitamins A, B₁, B₂ (G), and D.

Anthratin Ointment: For treatment of psoriasis.

Nembutal Suppositories: Nausea alleviator, sedative.

Metaphedrin Jelly: Doubly effective, decongestant germicide.

Thioglycerol Solution: Epithelial growth stimulant.

Allantoin Capsules: For chronic infections.

Bilhuber-Knoll Corporation, Jersey City, N. J.

Calciphos: For calcium-deficiency diseases.

Dilaudid: Analgesic and cough sedative.

Octin: Antispasmodic of smooth musculature.

Ernst Bischoff Company, New York, N. Y.

Dermotricofitin: Ringworm diagnosis.

Dermatomycol: Ringworm treatment.

Chappel Bros., Inc., Rockford, Ill.

Prephysin: Gonadotropic hormones from pituitary.

Endo Products, Inc., New York, N. Y.

Endo-Antrone: Anterior pituitary-like sex hormone.

Endo-Ovatin: Anterior pituitary-like sex hormone.

Endogen "A": Nonspecific protein therapy (arthritis).

Endogen "G": Nonspecific protein therapy (gonorrhea).

Endogen "U": Nonspecific protein therapy (gastric and duodenal ulcers).

Farnsworth Laboratories, Chicago, Ill.

Formula No. 80, HCl 1:500: For painless intramuscular administration.

Allium Tablets: Garlic concentrate for hypertension.

Harrower Laboratory, Inc., Glendale, Calif.

Menocrin (Drops): Regulator of menstrual functions.

Bilisalin: Facilitating hepatic detoxicative function.

Correlin (Drops): Preventive post-febrile endocrine depletion.

Endothylin (Drops): Triple-strength detoxicated thyroid.

Endophrin Inhalant: Instantaneous antispasmodic in asthma.

Hille Laboratories, Inc., Chicago, Ill.

Zinc Borate-Hille (With Ephedrine): Soluble germicidal decongestive.

Walter Janvier, Inc., New York, N. Y.

Rolicin: Vacuum-refined castor oil.

Loeser Laboratory, New York, N. Y.

Galtanol: Hernia injectant.

Merck & Company, Inc., Rahway, N. J.

Cebione: Crystalline vitamin C₁, antiscorbutic.

Vinethene: Rapid inhalation anesthetic.

Mecholyl: Parasympathetic stimulant, vasodilator.

Spicer & Company, Glendale, Calif.

Edwenil: Polyvalent antigen, for endotoxic infections.

C. S. N.: Sensitizer defenses, for chronic infections.

Tilden Company, New Lebanon, N. Y.

Irotheron: Iron therapy.

Eu-Ben-Sal Liquid: Epidermophytosis, treatment of ringworm.

Caltheron: Calcium therapy.

Lubtheron: Lubrication therapy.

Wilson Laboratories, Chicago, Ill.

Adrenal Cortex Extract: Hypodermic hormone extract.

Concentrated Gastric Mucin Granules: Gastro-duodenal ulcer therapy.

Chondroitin: Idiopathic headache remedy.

Epinephrin Solution 1:100: Inhalation treatment for asthma.

Liver Extract Ampoules: Treatment of pernicious anemia.

Winthrop Chemical Company, Inc., New York, N. Y.

Drisdol: Water-soluble crystalline vitamin D.

Cyclobis: Improved bismuth antisyphilitic.

Devegan: Specific for trichomonas vaginitis.

Evipal Soluble: Intravenous anesthetic agent.

Mebaral: Sedative and anti-epileptic.

Novaldin: Oral and injectable analgesic.

Zemmer Company, Pittsburgh, Pa.

Pulvis Thi-Oxiquin: Treatment for athlete's foot.

Tablets Theo-Salicylate Comp.: Treatment for angina pectoris.

Tablets Bi-Oxalate Comp.: Treatment for pyloric spasms.

THUMBNAIL THERAPEUTICS

Injection Anesthesia in Obstetrics

PARASACRAL anesthesia is effective in major operative deliveries from below; pudendal block anesthesia for spontaneous delivery and easy forceps application at the outlet; infiltration for primary repair of lacerations and episiotomy wounds.—**Drs. B. E. TUCKER and H. B. W. BENARON**, Chicago, Ill.

Mercurial Diuretics

BEFORE giving one of the mercurial diuretics like mersalyl (Salyrgan) in the treatment of cardiac edema, it is well to prepare the heart for the strain of the enormous mobilization of fluid by giving 0.25 mg. of strophanthin along with the mersalyl; also to be prepared to treat energetically the cardiac embarrassment which may follow this medication.—**DR. S. TZIWANOPOULOS**, in *Munch. med. Wchnschr.*, Dec. 6, 1934.

Peppermint in Indigestion

THE old "home remedy" for indigestion—peppermint—is now placed on a scientific basis by the discovery that oil of peppermint diminishes gastric acidity and shortens the emptying time of the stomach by 46 percent. The practice of serving a peppermint cordial after a heavy dinner has a sound basis.—**Drs. SAPOZNIK, ARENS, MEYER and NECHELES**, in *J. A. M. A.*, May 18, 1935.

Prostatism

THE consensus of the best urologic specialists seems to be that an open operation (preferably through the perineum) must be used in the treatment of large, generally hypertrophied prostates, reserving transurethral resection for the removal of small lobes, median bars and constrictures.—**DR. FRANK HINMAN**, in *Calif. and West. Med.*, Apr., 1935.

Vitamin E in Habitual Abortion

FROM the information available, it appears that vitamin E, as found in wheat-germ oil, definitely promotes gestation in women, its greatest value being in the prevention of habitual abortion.—**DR. E. M. WATSON**, London, Ont., Can.

Diabetes Insipidus

POWDERED posterior pituitary, applied as a snuff, using $\frac{1}{4}$ grain three times a day, will control the symptoms of diabetes insipidus at low cost.—**DR. HANS LISSER**, San Francisco, Calif.

Blood Cholesterol and Arteriosclerosis

A HIGH-CARBOHYDRATE, low-calorie diet will cause a marked decrease in the blood cholesterol, which apparently will lead to the postponement or prevention of arteriosclerosis. A blood cholesterol figure of 300 mg. or more per 100 cc. of blood may be considered abnormal.—**DR. I. M. RABINOWITCH**, Montreal, Can.

Congenital Syphilis

IF all pregnant women are studied for the possible presence of syphilis, and all in whom it is found are given mild but continuous treatment, during their pregnancy, with neoarsphenamine and a heavy metal (bismuth or mercury), 95 percent of cases of congenital syphilis can be prevented.—**DR. JAMES R. McCORD**, in *J. A. M. A.*, July 13, 1935.

Prompt Relief of Joint Pains

THE injection of 1 cc. of a 1:1,000 solution of procaine hydrochloride, into the insertions of the affected tendons and ligaments, will give prompt relief from the pain accompanying sprains and minor luxations, and even in many cases of acute and chronic arthritis. With the relief of pain, the functions of the affected parts can often be resumed without discomfort, if this seems desirable.—**PROF. LERICHE**, of Strasbourg, in *J.A.M.A.*, Nov., 1933.

Relapsing Fever

ONE dose of neoarsphenamine, 0.1 Gm. for each kilogram of body weight, given at the beginning of a paroxysm, will cure practically every case of relapsing fever, which is frequently mistaken for malaria. This dose should not be given in the middle of an attack nor between attacks.—**DR. JAMES O. GILLESPIE**, in *J. A. M. A.*, May 25, 1935.

NEW BOOKS

Any book reviewed in these columns will be procured for our readers if the order, addressed to **CLINICAL MEDICINE AND SURGERY**, Medical & Dental Arts Bldg., Waukegan, Ill., is accompanied by a check for the published price of the book.

Leisure without books is the death and burial of a man alive.—SENECA.

Dickinson and Bryant: Birth Control

CONTROL OF CONCEPTION. An Illustrated Medical Manual. By Robert Latou Dickinson and Louise Stevens Bryant. Baltimore: Williams & Wilkins Company. 1934. Price, \$4.50.

The feeling is steadily growing that the use of various methods for preventing conception should be under the guidance or control of the medical profession. Formerly most physicians did not know enough about the necessary technics to make their advice of much value, but today, if they do not know, it is their own fault, because the information is available in a number of sound and reliable books. If the physician refuses to do his duty by his patients in this regard, they will simply go elsewhere.

There is now at hand a large collection of thoroughly tested data, much of which has been collected by the National Committee on Maternal Health, and in this volume the whole subject is gone into in a clear, direct and straightforward manner, so that any person of average intelligence can comprehend it fully.

With a brief but adequate foundation of the anatomy and physiology of the male and female genital organs, of coitus and of conception, all the methods (good and bad) of contraception are discussed with a completeness of detail and authority and an impartiality which are refreshing and truly helpful. Very free use is made of original line drawings, diagrams and charts, so that there may be no possible doubt as to exactly what is meant.

The authors do not content themselves with a consideration of the chemical and mechanical methods which are steadily gaining in popularity, but explain the methods giving longer protection, such as the application of heat to the testicles or of x-rays to the male or female gonads or both, and the use of hormones and spermatotoxins. This is followed by a section on the technic of the operations (fully illustrated) for sterilizing men and women without unsexing them.

To round out the presentation, the indications for therapeutic abortion, sterilization and contraception are succinctly stated; the legal status of these procedures is outlined; and directions for the organization and service of a contraceptive clinic are given.

Of all the books on birth control which have passed through the reviewer's hands,

this is the best. Even those who have other similar books will do well to add this to their libraries. No physician in general practice today is adequately equipped without a knowledge of modern methods in this field.

Griffiths: Injury and Incapacity

INJURY AND INCAPACITY. With Special Reference to Industrial Insurance. By H. Ernest Griffiths, M.S. (Lond.), F.R.C.S., Surgeon, Albert Dock Hospital; Surgeon, Hertford County Hospital; Consulting Surgeon, Wimbledon Hospital; etc.; Hunterian Professor in Surgery to the Royal College of Surgeons; Arris and Gale Lecturer, Royal College of Surgeons. Baltimore: William Wood and Company. 1935. Price, \$5.00.

A very practical and reliable reference work and guide to prognosis for physicians, attorneys and insurance men dealing with industrial accidents and workmen's compensation, by a British physician who is a national expert in this special field, whose figures are accepted by British courts as absolutely trustworthy.

Based on not merely personal experience, or one industry, but also on an exhaustive analysis of 50,000 consecutive cases of accidents from the records of one of England's largest insurance companies, the book establishes solid foundations for estimating the probable period of incapacity in any given injury in any particular patient. It is unique because apparently no other book in any language has endeavored to show what general capacity is needed for the performance of various types of work. Also no other book discusses the general disability that may follow any individual injury.

Joslin: Diabetes Mellitus

THE TREATMENT OF DIABETES MELLITUS. By Elliott P. Joslin, M.D. (Harvard), M.A. (Yale), Medical Director, George F. Baker Clinic, New England Beaconsess Hospital; Clinical Professor of Medicine, Harvard Medical School; Consulting Physician, Boston City Hospital. With the Cooperation of Howard F. Root, M.D., Priscilla White, M.D., Alexander Marble, M.D. Fifth Edition, Revised and Rewritten. Illustrated. Philadelphia: Lea & Febiger. 1935. Price, \$6.00.

This work reflects the experience of the

leading authority in the treatment of diabetes mellitus over a period of 37 years, during which time he has treated some 13,000 cases of this disease. It records the evolution of its treatment and shows why the greatly increased longevity of diabetic patients may be confidently expected to be extended still further. It summarizes the vast progress in the study of the disease, particularly in relation to the endocrine glands, provides the physiologic and pathologic background so essential to complete understanding, shows how the needless deaths that result from coma and gangrene may be avoided, and points out the dangers of neglected obesity.

It is estimated that there are now 500,000 diabetics in the United States alone, and every physician should be prepared to give to these unfortunates the treatment that this book presents. Dr. Joslin's collaborators, with their special knowledge of diabetic surgery and circulatory conditions and their experience in chemical research and in the handling of diabetic children, have contributed much to the broadening of the text. They now offer to the general practitioner the fruits of years of intensive specialization.

Dr. Joslin's personality and charm pervade his book, every page of which reveals his breadth of knowledge and his inherent wisdom. His work is a happy combination of scientific and clinical experience, which he so readily shares with all. In its present edition it will be found more useful than ever before, and should be in the library of every active clinician, for daily study and use.

Harrower: Everyday Endocrinology

THREE LECTURES ON ENDOCRINOLOGY IN EVERYDAY PRACTICE. By Henry R. Harrower, M.D. Glendale, California: Harrower Laboratory, Inc. 1935. Price, \$1.00 (in thin-paper brochure form, free on request).

The average physician in general practice, who has made no real study of endocrinology, but is beginning to realize that he ought to know more about it, is likely to find that many of the highly valuable books on the subject are too extensive and technical to give him the information he would like to be able to put to use at once.

Here is a little working-manual of practical endocrine therapy, written by a man who has had years of successful clinical experience with these products and expressed in a clear, direct and conversational style which makes easy reading and gives the active clinician the information he needs for immediate use with the minimum expenditure of time and effort—general principles, which can readily be applied to any specific case.

Here one will find, not only suggestions as to the appropriate opotherapeutic preparations for use in certain cases, but also remarks on dosage, complicating factors and reasons for failures.

One of the most important facts brought out is that, for every case of frank, specific endocrinopathy, there are scores or hundreds of cases of minor endocrine deficiencies, not

ordinarily recognized as such (arthritis and asthma, for instance), in which the intelligent use of glandular products would bring success.

Any general practitioner who will keep this little book on his desk and use it every day, will be able to increase his practice several hundred dollars a year. The cloth-bound volume is a handsome and strongly made book which will stand hard use; but those who do not feel like spending even a dollar can have the same material in a paper-covered brochure for the asking and should not miss such a chance.

Rice: Bacteriology

A TEXTBOOK OF BACTERIOLOGY. By Thurman B. Rice, A.M., M.D., Professor of Bacteriology and Public Health at the Indiana University School of Medicine. Illustrated. Philadelphia and London: W. B. Saunders Company. 1935. Price, \$5.00.

The author has set for himself the task of presenting a manual on bacteriology, of comparatively small size, yet suitable to the needs of the beginner, as well as the general practitioner who has to make his own bacteriologic examinations, and is to be felicitated on the happy manner in which he has interestingly and instructively covered the entire range of bacteriology.

Dr. Rice has discussed the history of bacteriology and its place in everyday life and in medical progress, as well as the morphology, biology and types of bacteria, cocci, spores, treponemas, filtrable viruses, agglutinins, vaccines, protozoa and blood tests, not only from the laboratory, but also from the clinical points of view. The text is replete with practical suggestions, some of which are seen for the first time in lucid explanations.

Both medical students and general practitioners will find this work very useful in their routine studies and work, and stimulating as a purely academic study.

Mantegazza: Anthropology of Sex

THE SEXUAL RELATIONS OF MANKIND. By Paolo Mantegazza. Translated by Samuel Putnam. Edited by Victor Robinson, M.D. New York: Eugenics Publishing Company. 1935. Price, \$3.00.

Paolo Mantegazza was one of the pioneers in the scientific study of sex relationships; and when one remembers that he lived and wrote in the middle of the nineteenth century, when Victorian prudery was widespread, one realizes that the publication of the results of such studies required courage. This book, which was written in 1885, has been translated into several languages, and is generally accepted as authoritative.

This excellently written and translated work is classifiable, neither as erotica nor erotology, but as a genuine contribution to the sexual aspects of anthropology. It is the result of wide and accurate personal observation and an extensive study of the literature

on the subject. The scientific outlook and presentation sterilizes it from all taint of obscenity or prurieny. One would have to have a definitely salacious mind in order to find anything erotically provocative in these scholarly pages.

It deals with such matters as the initiatory rites at puberty and the marriage customs of barbarous and semi-civilized peoples; the forms and perversions of the sexual embrace; the evolution of modesty and chastity; the history and varieties of prostitution; and other similar subjects.

A book like this is of far more interest and value to the student of anthropology and ethnology than it can be to the practicing clinician, because it deals, almost entirely, with the presentation of observed facts, few of which will ever come within the scope of any but a very few physicians, and concerns itself little with practical psychologic connotations or with the solution of the everyday sex problems which confront the relatively civilized people of the twentieth century in the Western world. It should be in every general scientific and medical library, as a work for reference, but will be of relatively little practical value to the average clinician.

Physician's Visiting List

THE MEDICAL RECORD VISITING LIST OR PHYSICIAN'S DIARY FOR 1936. Revised. Baltimore: William Wood & Company. Price, 30 patients, \$1.75; 60 patients, \$2.00; 90 patients, \$2.50.

The 1936 edition of this annually-issued physician's pocket book, in which to keep records of appointments, calls, consultations, obstetric engagements, financial transactions and other important data, is a worthy successor to those that have served so well in the past.

In addition, it has essential information for emergencies, with dose tables, etc. Every visiting practitioner needs such a helpful notebook.

Mental Disorders

THE PROBLEM OF MENTAL DISORDER.

A Study Undertaken by the Committee on Psychiatric Investigations National Research Council. Members of the Committee, Madison Bentley, Chairman, Sage Professor of Psychology, Cornell University; E. V. Cowdry, Professor of Cytology, Washington University. First Edition, Second Impression. New York and London: McGraw-Hill Book Company, Inc. 1934. Price, \$4.00.

Mental disorders, especially the more serious ones, were, in past ages, considered to be due to demoniac possession, and the sufferers were treated with inhuman barbarity.

We, of today, have learned, more or less generally, to look upon mentally alienated persons as being ill, and to treat them with a reasonable degree of kindness, if not, always, with any great intelligence; for psychiatry, as a science, is still in its swaddling clothes, though there are some who are practicing it as an art with conspicuous success.

On the assumption (by no means fully demonstrated) that mental disorders are always or generally due to physical pathoses, this volume is a sincere attempt to bring together, for study and reference, as complete a statement as is now possible of our present knowledge of the anatomy, physiology and chemistry of the brain and nervous system, with the contributions made to the subject by biology, genetics, sociology, endocrinology, anthropology, experimental psychology and the other "supporting sciences," and the opinions of clinical psychiatrists and psychologists of various schools.

It will prove a valuable book of reference in libraries and for research workers in these fields, but of little use or practical interest to the average clinician.

Gregory: Endocrines

A B C OF THE ENDOCRINES. By Jennie Gregory, M.S. Foreword by Carl G. Hartman, Department of Embryology, Carnegie Institution of Washington. Baltimore: The Williams & Wilkins Company. 1935. Price, \$3.00.

In this book of large charts, the author has succeeded in clarifying a complex subject by putting it in a form which makes it easy for even a high-school student to grasp. Each gland is concisely described (mostly in pictures) in a separate chapter, with additional chapters on history, experimental methods, and general relationships between glands; but the information is most strikingly and graphically conveyed by 82 original charts, some double-page, including outline drawings and diagrams. The glossary includes 200 endocrinologic terms, for which French, German and Italian equivalents are given. Physicians, students, nurses and others will find the book helpful.

Todd and Sanford: Clinical Laboratory Diagnosis

CLINICAL DIAGNOSIS BY LABORATORY METHODS. By James Campbell Todd, Ph.D., M.D., and Arthur Hawley Sanford, A.M., M.D. 8th Edition. Philadelphia: W. B. Saunders Company. Price, \$6.00.

Todd's *Clinical Diagnosis* has been a familiar textbook for the past quarter-century, to most medical students and practitioners. This eighth edition, revised and edited by Dr. Sanford, has been thoroughly brought up to date. Every chapter has been gone over and brought into line with the newer procedures adopted in clinical laboratories, keeping in mind the needs of students, teachers, physicians and laboratory workers. The new matters include a chapter on clinical chemistry and extensive additions to the chapters on urinalyses.

The chapters devoted to blood examinations have been revised and include all the more recent techniques, with the newer developments in serology.

This volume is a reliable guide for laboratory practice, both for hospital work and for the practitioner who makes his own

clinical investigations. There are numerous illustrations where called for and a copious index.

O'Meara: Medical Experiences in India

I'D LIVE IT AGAIN. By Lieut-Col. E. J. O'Meara, Indian Medical Service (Retired). Philadelphia: J. B. Lippincott Co. 1935. Price, \$2.50.

Here is a collection of the experiences of a medical officer in India, simply and directly told, without artifice or ornamentation. The unusual character of the various tales furnishes the reason for their publication. They

range all the way from a discussion of the Hindu religion and its caste system to pig-sticking, cholera and murder, and include plenty of "shop" stories for doctors.

Though written in the first person, this is not an autobiography, in the ordinary sense, as the various incidents related have no rational order nor sequence, but come along as a man would tell them in conversation.

This is a book that the busy practitioner can pick up when he has half an hour of leisure, open it anywhere and read for a while with interest and lay it down without uneasiness to "see how it comes out"—a well-worth-while quality for those who must do their recreational reading in bits.

New Books Received

The following books have been received in this office and will be reviewed in our pages as rapidly as possible.

THE SPECIAL PROCEDURES IN DIAGNOSIS AND TREATMENT. An Outline for Their Understanding and Performance. By Don Carlos Hines, M.D. Stanford University, Calif.: Stanford University Press. 1935. Price, \$1.00.

INTERNATIONAL CLINICS. Edited by Louis Hamman, M.D. Volume IV—45th Series, December, 1935. Philadelphia: J. B. Lippincott Company. Price, \$3.00.

INFANT NUTRITION. A Textbook of Infant Feeding for Students and Practitioners of Medicine. By Williams McKim Marriott, B.S., M.D. 2nd Edition. St. Louis: The C. V. Mosby Company. 1935. Price, \$4.50.

THE 1935 YEAR BOOK OF GENERAL MEDICINE. Edited by George F. Dick, M.D., Lawrason Brown, M.D., George R. Minot, M.D., S.D., F.R.C.P. (Hon.) Edin., William B. Castle, M.D., A.M., William D. Stroud, M.D., and George B. Eusterman, M.D. Chicago: The Year Book Publishers, Inc. 1935. Price, \$3.00.

THE MEDICAL TREATMENT OF GALLBLADDER DISEASE. By Martin E. Rehfuess, M.D., and Guy M. Nelson, M.D. Philadelphia: W. B. Saunders Company. 1935. Price, \$5.50.

NEW PATHWAYS FOR CHILDREN WITH CEREBRAL PALSY. By Gladys Gage Rogers and Leah C. Thomas. New York: The Macmillan Company. 1935. Price, \$2.50.

DEMONSTRATIONS OF PHYSICAL SIGNS IN CLINICAL SURGERY. By Hamilton Bailey, F.R.C.S. (Eng.). 5th Edition, Revised. Baltimore: William Wood & Company. 1935. Price, \$6.50.

MODERN OFFICE AND GENERAL PRACTICE. A Handbook of Practical Medicine. By Deane R. Brengle, M.D. Kingsport, Tenn.: Southern Publishers, Inc. 1935. Price, \$3.25.

DISEASES OF WOMEN. By Harry Sturgeon Crossen, M.D., F.A.C.S., and Robert James Crossen, M.D. 8th Edition Entirely Revised and Reset. St. Louis: The C. V. Mosby Company. 1935. Price, \$10.00.

CURRENT LEGAL THOUGHT. Medical Jurisprudence Number. New York: Current Legal Thought, Inc. October, 1935. Price,

paper \$1.50; cloth \$2.00.

ROYAL TREATMENT IN CARDIOVASCULAR DISEASE. By Pierre Noel Deschamps, M.D. (Paris). Baltimore: William Wood & Company. 1935. Price, \$2.00.

ATLAS DER KLINISCHEN ELEKTROKARDIOGRAPHIE MIT ANLEITUNGEN ZUR DIFFERENTIALDIAGNOSE. By Dr. Wilhelm Dressler. 2nd Edition. Berlin, Germany: Urban & Schwarzenberg. 1936. Price, geb. RM 15.—

HIGH BLOOD PRESSURE AND ITS COMMON SEQUELAE. By Hugh O. Gunewardene, M.B., B.S. (Lond.), D.M.R.E. (Contab.). Baltimore: William Wood & Company. 1935. Price, \$3.00.

CHEMISTRY IN THERAPEUTICS. By Walter B. Guy, M.D. Philadelphia: W. Roy Huntsman, Publisher. 1935. Price, \$3.00.

CLINICAL DIAGNOSIS OF DISEASES OF THE MOUTH. A Guide for Students and Practitioners of Dentistry and Medicine. By Louis V. Hayes, A.B., D.D.S. Brooklyn: Dental Items of Interest Publishing Company, Inc. 1935. Price, \$7.50.

ESSENTIALS OF PSYCHOPATHOLOGY. By George W. Henry. Baltimore: William Wood & Company. 1935. Price, \$4.00.

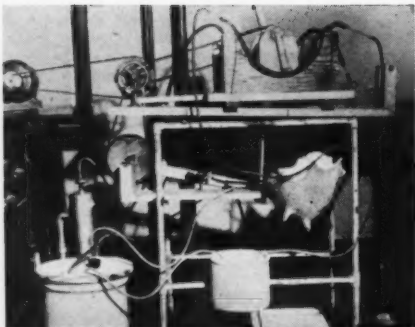
AN ESSAY ON THE EXTERNAL USE OF WATER. By Tobias Smollett. Edited, with Introduction and Notes by Claude E. Jones. Baltimore: The Johns Hopkins Press. 1935. Price, \$1.00.

KLEINES MERKBUCH ZUR DIFFERENTIALDIAGNOSE FÜR ARZTE UND STUDIERENDE. By Dr. Johann Stur. Berlin, Germany: Urban & Schwarzenberg. 1935. Price, geh. RM 7.50, geb. RM 9.—

THINGS TO COME. A New Story Based on the Material Contained in his Book "The Shape of Things to Come." By H. G. Wells. New York: The Macmillan Company. 1935. Price, \$1.50.

THE HERRMANNSDORFER - SAUERBRUCH DIET. By Robert Wollheim and Walter H. Schausinsland, Ph.D. New York: Professional Scientific Service. 1935. Price, \$1.00.

MEDICAL NEWS



An Artificial Heart

NATURE is still the best and most efficient mechanic! Compare the heart of any warm-blooded animal with this maze of hose, wheels and jars—the “artificial heart,” devised by Dr. W. E. Petersen, of the University of Minnesota, with which he kept “alive” the udder of a dead cow (and obtained milk from it!) for 13 hours. One hopes that this sort of thing will not go so far that the story of Frankenstein will be reproduced in real life. This machine looks as if there were little immediate danger.

Cost of Accidents

IN 1934, 101,000 people were killed in accidents, 370,000 were permanently disabled, and 9,821,000 were temporarily disabled. Many more disabling accidents occur in homes than on the highways (possibly because most people, especially women, spend more time in the former than in the latter locality). The total cost of accidents in this country in 1934 was estimated at \$3,500,000,000—more than the annual medical bill of the United States for all types of service.

Crystalline Vitamin E

IT is reported that, at the recent meeting of the American College of Surgeons, at San Francisco, Dr. Herbert Evans, of the University of California, showed a gram of pure, crystalline vitamin E, which he has extracted from cotton seed and wheat germ. This material will be used for carrying out tests to determine the exact clinical application of this substance in human beings.

Mississippi Valley Medical Society

AT a recent meeting of the Board of Directors of the Mississippi Valley Medical Society, Dr. H. B. Goodrich, of Hannibal, Mo., was chosen as president, and Dr. B. F. Dorsey, Jr., as president-elect. The Society is being incorporated in Illinois. The next meeting will be held in Burlington, Ia., Sept. 30 and Oct. 1 and 2, 1936.

The report of the 1935 meeting in *CLIN. MED. & SURG.* for Dec., 1935 (p. 587), will suggest to all forward-looking physicians in Illinois, Iowa and Missouri that they ought to be members; and to all in the Midwest that they should attend the next meeting.

Full particulars may be obtained from the Secretary, Dr. Harold Swanberg, W. C. U. Bldg., Quincy, Ill.

Openings in Illinois

IT is reported that there is an opening for a general practitioner, who is willing to do country work, at Milburn, Ill. No names are available as references, but it would seem that the postmaster or the principal druggist in the village could give information.

IT is reported that there is an opening for a keen and active physician, in a northern suburb of Chicago. A knowledge of Italian would be an advantage. Those interested may write to Bernardi, the Druggist, Highwood, Ill.

The Advertisements are NEWS! Read and use them.

Progestin from Whales

WHALES are not fish, as some people still seem to believe, but mammals, like elephants and hippopotami, except that they live in the water; moreover, the hunting of whales is still a regular commercial occupation in the circumpolar seas.

Science for Nov. 20, 1935, reports that it has recently been discovered that the female sex hormone, progestin, can be obtained in large quantities, as a by-product of the whaling industry, and authorities in London, England, believe that, until progestin can be produced synthetically on a commercial scale, she-whales bid fair to be a major source of this hormone.

SEND FOR THIS LITERATURE

To assist you in obtaining new and worthwhile literature on equipment, pharmaceuticals, foods, physicians' supplies, etc., CLINICAL MEDICINE AND SURGERY will gladly forward your requests for such catalogs, booklets, reprints, etc., as are listed from month to month in this department.

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